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ABSTRACT

This study used regression analysis techniques to examine the current positions of women whose first child was born when they were teenagers, across countries in the European Union, based on the European Community Household Panel survey. Outcomes considered include educational attainment, family structure, family employment, and household income. Data were obtained from the third wave of data collection in 1996, the sample for which consisted of 61,006 households in 14 countries. Women between ages 16 and 64 at the time of the survey were considered for this study. Results indicated that women whose first child was born during their teenage years were disadvantaged in all countries, but the severity of their position varied substantially between countries. About half the women who had a child at age 18 gained upper secondary education qualifications; the proportion was 89 percent for women who delayed having a child until age 28. Forty percent of 18-year-old mothers were in poverty when their child was 10-years-old, compared to only 11 percent of the 28-year-old mothers. In most countries, young mothers were less likely to be in formal marriages, with the exception of Greece. In the majority of countries, young mothers were less likely to have a job or to have a partner in work. The Netherlands was the country where young mothers were most disadvantaged. A second group of countries (France, Belgium, Denmark, United Kingdom, Ireland, and Finland) had severe consequences for young mothers. A third group of countries (Portugal,

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Germany, Greece, Austria, Italy, and Spain) showed less strong consequences. (Contains 8 figures, 29 tables, an appended table, and 16 references.) (KB)

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THE OUTCOMES OF TEENAGE MOTHERHOOD IN EUROPE

Richard Berthoud and Karen Robson

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THE OUTCOMES OF TEENAGE MOTHERHOOD IN EUROPE

Richard Berthoud and Karen Robson*

– July 2001 –

**Institute for Social and Economic Research, University of Essex, UK*

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Appendix 1: *Five outcomes: teenage mothers compared with mothers whose first child was born in their twenties, by country*

Abstract

Research in many countries has confirmed that teenage mothers and their families are often at a disadvantage compared with those whose children are born in their twenties or thirties. But there has never been an opportunity for a systematic comparison between countries, based on a common data source. This paper analyses the current positions of women whose first child was born when they were teenagers, across 13 countries in the European Union, based on the European Community Household Panel survey. Outcomes considered include educational attainment, family structure, family employment and household income. Teenage mothers were disadvantaged in all countries, but the severity of their position varied substantially between countries.

1. Introduction

Aims

Although the age range during which women are conventionally assumed to be fertile is between 15 and 44, nine out of ten babies in western countries are born when their mother is in her twenties or thirties (Eurostat 2000). Relatively few women conceive and give birth before the age of twenty. And, as a combination of prolonged education, increased employment opportunities and the availability of contraception have tended to delay women's decision to start their families, teenage motherhood is increasingly rare in many countries. Even in countries where fertility rates among teenagers have not been falling, it is seen as increasingly exceptional, as the average age at which other women have their first child has risen.

Teenage motherhood has been of concern to governments for two distinct reasons – medical and socio-economic. Teenage mothers and their babies show higher than average risks of unsatisfactory progress during pregnancy, difficulties at the birth, and poor health in subsequent years (Fraser and others 1995, Strobino 1992, Cunnington 2001). Teenage mothers and their families have also been shown to experience social disadvantage on such measures as education, housing, employment and family income (Hoffman and others 1993, Ribar 1999, Wellings and others 1999). In practice these two types of problem are probably not as independent as they may seem, since the medical problems may be associated as much with low levels of care as with any straightforwardly physiological difficulty associated with early conception (SEU 1999).

During the peak fertility period in the mid- to late-twenties, as many as 120 women in every thousand have a baby in the course of a year (see page 12). Teenage birth rates are much lower (UNICEF 2001): between 6 and 14 per thousand in the continental west-European countries, though between 18

and 31 per thousand in the UK and some other English-speaking countries, and as high as 52 per thousand in the United States. Another important difference is that the teenage birth rate has fallen in many continental West European countries, but has remained stable in English-speaking countries, including the UK.

UNICEF Innocenti Research Centre has been conducting a major review of teenage motherhood. A key component of the enquiry is a comparison between western countries in the risk of teenage motherhood, in the disadvantages for mothers and for children associated with early parenting, and in the policies adopted to address the issue.

Although the outcomes of teenage motherhood have been well-studied within various countries, each research project has been carried out independently, and it is extremely difficult to make direct comparisons between countries. This current paper is based on a structured comparison between member-states of the European Union, derived from analysis of a single data set, the European Community Household Panel (ECHP). The initial analysis was undertaken at the request of, and in collaboration with, the UNICEF Innocenti Research Centre, as a direct contribution to its wider enquiry. Much of the more detailed analysis has been undertaken as a contribution to a wider programme of research on The Dynamics of Social Change in Europe, supported by the European Commission. The paper is being released jointly by UNICEF and ISER, to coincide with the publication of the UNICEF Innocenti Research Centre's own 'Report Card' on *Teenage Births in Rich Nations* (UNICEF 2001).

It is *not* the objective of this analysis to estimate the prevalence of teenage motherhood in European countries. Our own and UNICEF's estimates of age-specific fertility rates are based on the most reliable source, national birth-registration statistics. The ECHP survey, though, includes a sample of women with dependent children, and we can work out how old they must have been when their first child was born. We then compared the current situation of the women, and of their families, according to the age of the mother at her first birth. We will focus on four types of outcome: the women's *educational qualifications*; their *family structures*; their and their families' *employment*; and their households' level of *income*.

Although the medical outcomes of teenage pregnancy are an important issue both for clinicians and for policy makers, they are not included in this analysis. The paper is entirely based on the socio-economic disadvantages on which the ECHP provides detailed information.

This is the first time that precise cross-national comparisons of this sort have been available. They are made possible by a combination of two factors: the development of a technique for using data about current family structure to identify mothers' age at first birth (Berthoud 2001); and the existence for

the first time of a substantial survey conducted on the same basis in most countries in the European Union. The results confirm that many of the disadvantages associated with early parenting are in common across European countries. But they also indicate substantial differences between countries which will be important for the assessment and development of relevant policies.

In the remainder of this introduction, we briefly discuss the difficulty of interpreting the outcomes of teenage motherhood, based on information collected many years after the event.

The second main chapter describes the ECHP – the primary source of the analysis – and explains the procedure for identifying the age at which women had their children, based on their own and their children's dates of birth. This section also assesses the reliability of the method, using birth-registration statistics as the basis for comparison.

There then follows a series of chapters presenting the data: one discussing some general analytical issues; the next four showing the results for each of the types of outcome under consideration.

The final chapter reviews these findings with the aim of reaching broad conclusions about the varying experience of teenage motherhood across western Europe.

'Outcomes' . . . or 'consequences'?

The primary objective of the research is to observe variations in the outcomes for women and their families, depending on when their first child was born. The simplest possible summary of the findings is shown in Table 1. Taking the European Union as a whole (except Sweden), it can be seen that women whose first child was born when they were teenagers were consistently worse off than women who started a family in their twenties. A slightly higher proportion were bringing up their child(ren) without a co-resident partner. A substantially higher proportion of the mothers were not in employment. Twice as many teen-mothers as twenties-mothers had minimal educational achievements, and twice as many were in poverty. More than three times as many relied on transfers from outside their immediate family, because neither they nor their partner had a job.

Table 1: *Five outcomes: teenage mothers compared with women whose first child was born in their twenties*

Column percentages

	15 to 19	20 to 29	Ratio
Less than upper secondary education	67	34	2.0
Without partner	23	19	1.2
Not working (inactive or unemployed)	59	41	1.4
Neither woman nor partner is working	26	8	3.3
Household income below bottom quintile	45	21	2.1

Note: All Europe (13 countries), weighted. All the differences are significant.

A country by country analysis of all the outcomes in this table is provided in Appendix 1, and is quoted in UNICEF's 'Report Card' on teenage births (UNICEF 2001). The variations between countries are illustrated in Table 2, using household income as the example. In some countries (the Netherlands and Denmark) the poverty rate was three times as high for teen mothers as for women whose first child was born in their twenties; in some countries, the ratio was less than double; and in one country (Austria) there was hardly any difference.

Table 2: *Household income below bottom quintile: teenage mothers compared with women whose first child was born in their twenties, by country*

Cell percentages

	15 to 19	20 to 29	Ratio
Austria	31	24	1.3ns
Belgium	45	19	2.4
Denmark	24	8	3.0
Finland	29	17	1.7
France	51	18	2.8
Germany	54	21	2.6
Greece	30	17	1.8
Ireland	41	23	1.8
Italy	36	20	1.8
Netherlands	78	26	3.0
Portugal	26	16	1.6
Spain	35	22	1.6
UK	53	23	2.3
All Europe	45	21	2.1

Note: ns = not significant ($p>0.05$).

Much of the remainder of this paper will be devoted to detailed analysis of these findings. It is important to think carefully about the interpretation. The ECHP data provides information about the *current* social and economic positions of women, and of their families. The key base for comparison, within each country, and across all Europe, is the age at which mothers had their first child, at some date between one and fifteen years earlier. The paper confirms that families with a teenage mother were indeed worse off in several respects than families whose mother had had her first child in her twenties or thirties.

Thus a high risk of poverty, for example, is an 'outcome' of teenage motherhood. Is this a 'consequence' of teenage motherhood? Can we be confident that the same women would have had a lower risk of poverty if they had decided to delay their family until, say, their late twenties? Suppose women from disadvantaged backgrounds were much more likely to become pregnant in their teens. They might have had a high risk of eventual poverty, even if they had not had a child so early. If so, their poverty should be ascribed to their background, rather than to their early parenthood.

The ECHP analysis of current circumstances does not help with this question, because there is no information, which unequivocally relates to the period before women reached the age-group of interest. Two British sources of longitudinal data can be used, though, to provide an indication of the likely relationships.

The first is the National Child Development Study (NCDS). All the British children born in one week in 1958 have been studied at intervals up to the age of 33. By that time, a majority of the women had children of their own. Hobcraft and Kiernan (1999) have used the data explicitly to address the 'outcomes' or 'consequences' issue – could the relative disadvantage of women who had had children in their teens be explained in terms of the poverty they themselves had experienced as children, or did the early entry into parenthood have a direct effect in its own right?

- The analysis confirms that women who had been poor in their childhood were more likely to have become teenage mothers than women who had no history of poverty.
- It confirms that childhood experience of poverty was associated with a higher risk of poverty as an adult, independent of the woman's parenting pattern.
- These two findings suggest that part of the poverty experienced by teenage mothers and their families could be explained in terms of their family background – but only part.

- Teenage mothers were more likely to experience disadvantageous outcomes than other women, even after the influence of family background had been taken into account. In fact most of the apparent difference in risk was attributable to the age at which the woman had her first child, rather than to her childhood experiences.

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A more specific version of the same issue is concerned with the role of educational qualifications. In all the countries studied, teenage mothers were less likely than other women to have standard qualifications (page 21). This was one of the strongest associations observed; but also, one of the most difficult to interpret. Standard qualifications tend to be acquired during the teenage period, and education and motherhood may be seen as competing occupations at that age. Do women without qualifications, and little expectation of acquiring any, tend to start a family? Or do women who have a baby in their teens have to give up their schooling to look after it, and so lose the opportunity to gain qualifications?

The British Household Panel Survey sheds some light on this question. It has interviewed the same individuals in Britain for nine years across the 1990s. This includes about 500 women who were interviewed at the age of 18, and again a year later. As Table 3 shows:

- Young women with no, or minimal, qualifications at the age of 18 were much more likely to have a baby in the following year than those with the basic standard qualification. Those with better qualifications had even lower fertility rates.

- Young women who already had a baby at the age of 18 were only about half as likely to obtain additional qualifications in the following year, as those with no child.

This simple longitudinal analysis of teenagers' immediate experiences is not conclusive, because it does not take account of other potential influences on young women's decisions. But the sequence of events may suggest that a low level of qualifications is in part a 'cause' of teenage motherhood, and in part an 'effect'.

Table 3: *Relationships between having a baby and acquiring educational qualifications between age 18 and age 19: BHPS 1991-99*

	Percentage who had a baby between 18 and 19		Percentage who acquired qualifications between 18 and 19
Qualifications at age 18		*Family at age 18*	
None, or less than upper secondary	13.7	Had a child	7.7
Upper secondary	3.8	No child	14.8
Better qualifications	1.5		

Of course, this analysis only covers the British situation, and does not necessarily apply in other countries. The ECHP data do not allow us to assign shares to these directions of influence in each country. The analysis in this paper provides, though, the only available consistent comparison between countries of the extent of the disadvantage experienced by teenage mothers across Europe. The British evidence just reviewed suggests that at least part, perhaps a large part, of this disadvantage is a direct consequence of the fertility decision.

2. Identifying Women's Age at First Birth

The European Community Household Panel

The European Community Household Panel (ECHP) is a harmonised survey organised and largely funded by Eurostat, covering most member countries of the European Union. In each country, an initial sample of households was selected. All adults in each selected household were interviewed (and data also collected about children in the household). Each of the adults in the sample has then been re-interviewed in each subsequent year – thus making it a 'panel' survey, from which it is possible to study the changes affecting individuals, and their families, from year to year.

In most of the countries covered, the sample was selected, and interviews first took place, in 1994. In some countries, data from existing household panel surveys were transcribed into the common ECHP format, so that they could be analysed in parallel with the new surveys. Two of the countries covered, Austria and Finland, started their fieldwork in 1995 and 1996 respectively, having only recently joined the union. The most recent data available at the time of this analysis covered 1996.[1]

[1] It should be noted that the data describes the current situation of the families in 1996, whose (first) children has been born an average of eight years earlier.

Although data are available for three waves, and provide the potential for longitudinal analysis, we have not made use of the linked panel data on this occasion. This paper is based on a single annual data set, providing information at one point in time about members of a representative cross-section of households in each of the countries concerned. The third wave was the most recent available and contains data from more countries than the previous waves. The data for this wave were collected in 1996 and consist of 61,006 households in 14 countries. The number of households in the national samples is given in Table 4. More immediately relevant for our analysis is the number of women who were in the age range 16 to 64 at the time of their interview, given in the right hand column.

Table 4: *ECHP sample sizes in 1996*

	Number of households	Number of women aged 16 to 64	Analysis weight
Austria	3,291	3,063	0.87
Belgium	3,210	2,718	1.21
Denmark	2,955	2,301	0.77
Finland	4,129	3,802	0.46
France	6,600	5,654	3.44
Germany	4,593	3,872	7.17
Greece	4,908	4,764	0.73
Ireland	3,173	3,373	0.33
Italy	7,132	7,610	2.67
Luxembourg	933	843	na
Netherlands	5,179	4,393	1.19
Portugal	4,850	4,814	0.68
Spain	6,268	6,584	2.00
United Kingdom	3,775	2,976	6.30

Note: Although Sweden was a member of the EU in 1996 it did not yet provide an ECHP sample.

The accuracy of survey data depends mainly on the absolute number of households included, rather than on the proportion of the whole population that has been covered. It should be noted that the sample sizes varied between countries, so the analysis will not be as accurate in countries with small samples as in those with larger numbers. In particular, Luxembourg's sample was much smaller than the others. In fact, only ten teenage mothers were identified in the Luxembourg survey, and it has not been possible to include that country in the analysis. Even among the remaining 13 countries, the variation in sample sizes is not pro rata to the population of the countries concerned. Some of the results in this report are based on all-Europe (i.e. all

13 countries included in the analysis), or on more limited combinations of countries. Where countries have been combined, the data have been weighted so that each is represented in the results in due proportion to its population. The weights used are shown in the right hand column of Table 4.[2]

Basic method of identifying mothers' age at the birth of their children

The analysis is based on the assumption that the overwhelming majority of children live in the same household as their natural mother throughout their childhood. The ECHP contains data about all the members of each participating household, including their relationships to each other, and their dates of birth. For each woman in the sample, therefore:

- we linked her to her children, if any;
- we calculated how old she was when each child was born, by subtracting her date of birth from the child's date of birth.[3]

Consider, for example, a woman of 23 in 1996 with a child of five. She had been born in 1973 and her child in 1991. She would have been 18 when the child was born. The same principle can be applied to all birth ages (though in practice we have limited the analysis to birth-ages between 15 and 44). In eleven of the countries analysed, dates of birth were recorded by month as well as by year, and this information allowed us to calculate the mother's age at the birth of her child quite accurately. In Germany no months were recorded for either parents or children. In Denmark adults' month of birth was recorded, but not those of children under 17. These two countries were therefore less accurate.

The method just described had already been used for the analysis of a very large sample of women in Great Britain, and has been shown to provide teenage birth-rate estimates very close to those recorded in registration statistics (Berthoud 2001). It should be noted that it does not provide data on teenage *pregnancy* rates in countries where abortion is common. It will also be inaccurate as a measure of birth rates if there are countries where adoption is common.

Women's age at the time of the survey

An important technical consideration is the current age of the woman being analysed. Consider births that took place when a woman was aged 18.

[2] The weights were originally calculated to gross up to national populations; they were then scaled down to be relative weights, with an average of 1.

[3] Throughout the analysis, 'age' is used to mean age-last-birthday, or the number of complete years since the woman's or the child's birth. Note that the Eurostat definition of age at birth, commonly applied in many continental countries, is slightly different: it is the age reached during the calendar year of the birth.

Clearly, women now aged up to 17 cannot have had a baby at 18, though they may do so in future. Women now aged 18 may already have had a baby at that age; but some others may have a baby in the months between their interview and their 19th birthday, so we cannot measure 18-year-old birth rates accurately for those who are now 18. Good estimates can be made, though, for women who were 19 or older when interviewed. All the analysis in this paper is based on women who were at least a year older than the birth-age being considered.

There is also a maximum current age at which a woman's birth-age can be calculated. The method is based on the assumption that the great majority of children live with their mother. This assumption is valid when the child is 10. By the time the child is 30, the majority of children do not live with their mother (though this varies a lot between countries). It would not be possible to work out which women had had children at a particular age, and which had not, 30 years after the event. We need to know at what age the proportion of children no longer living with their mother becomes so high that estimates of women's previous fertility rates start to be under-estimated.

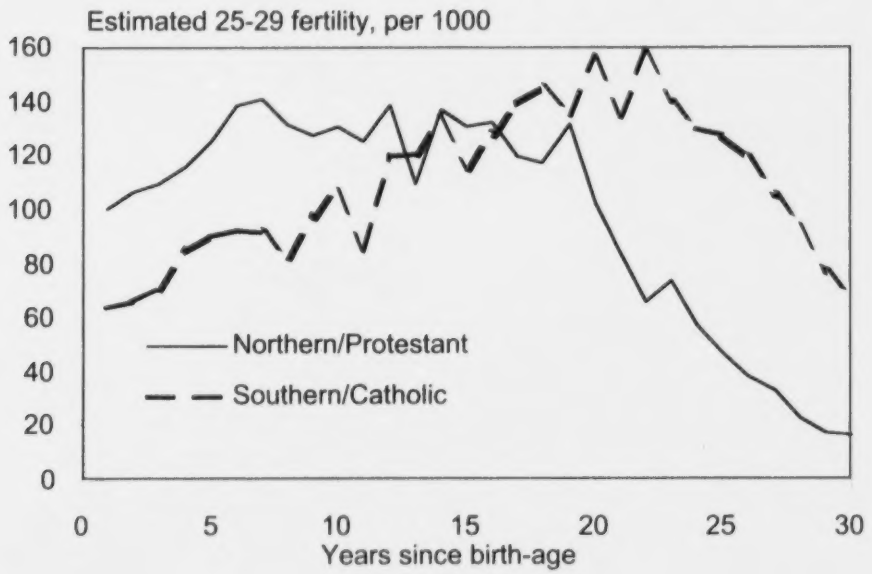
A previous analysis of the ECHP has shown that European countries can be divided into two groups, according to the ages and stages of young people's leaving home and starting a family of their own (Iacovou 1999). A northern/Protestant group of countries was characterised by a tendency to leave home relatively early, and settle down with spouse and children relatively late; while young people in a southern/Catholic group of countries tended to move straight from their family of origin to their family of procreation without intermediate stages. For our purposes, we divided the thirteen ECHP countries as follows:

Northern/ Protestant	*Southern/ Catholic*
Belgium	Austria
Denmark	Greece
Finland	Ireland
France	Italy
Germany	Portugal
Netherlands	Spain
United Kingdom	

Chart A plots the estimated fertility rates at ages 25 to 29 according to the number of years between the birth-age and the current age of the mother. (25-29 year old fertility rates have been used here, rather than teenage fertility rates, because we have a much larger sample of women who gave birth at

those ages, and because the trends over time have been less strong.[4]) For the northern/Protestant group of countries, estimated fertility rates remained stable for about 19 years after the birth-age under consideration, and then declined very rapidly as increasing numbers of young people had left home. For the southern/Catholic group of countries, the same pattern is observed, except that the plunge in estimated birth rates occurred a few years later, after age 22, and was less steep.

Chart A: Estimated fertility between 25 and 29, by number of years since birth-age under consideration.



Since a consistent rule is required, we have based our initial identification of fertility rates on women who were less than twenty years older than the birth-age under consideration. For example, births at age 18 are calculated for women who were aged up to 37. Some older women were of course living with a child, now in his or her twenties. On the other hand, we cannot be certain that other women above the age cut-off had not had a child at the age under consideration, who has since left home.

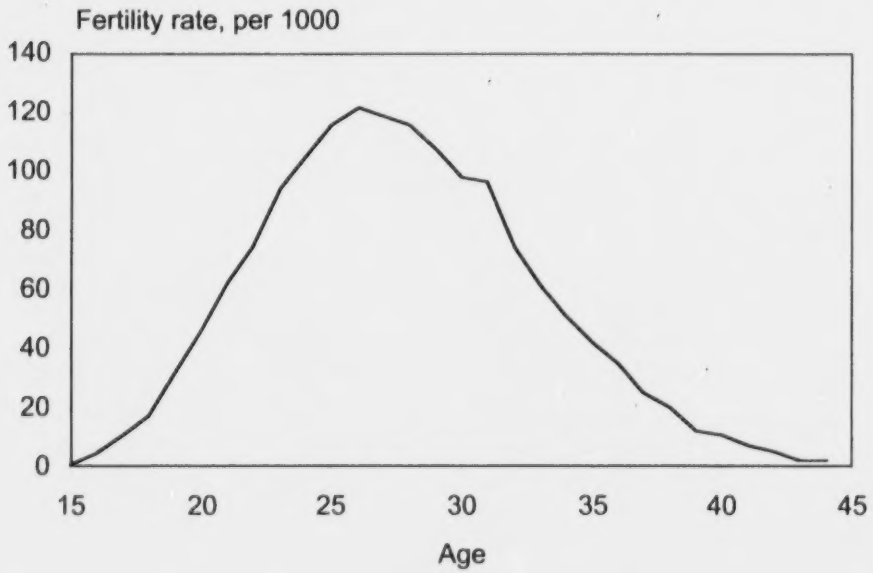
[4] Strong trends over time complicate the analysis because of the direct association between the current age of the child, and the date when s/he was born.

Age-specific fertility rates

Although estimating fertility rates at each age is not the object of this analysis, it is appropriate to compare the ages at birth identified according to the procedure just described, with the published statistics.

Chart B shows the number of births per thousand women across the full range of birth-ages between 15 and 44, derived from the ECHP. These overall statistics for all ages and across all countries are not a main output from the analysis, and are shown mainly to demonstrate that the shape of the curve is exactly as would have been expected, rising from close to zero at age 15 to a peak of about 125 per thousand between the ages of 25 and 27, and falling to close to zero again at age 44. The figures imply that the average woman would have 1.7 children over her life-time.

Chart B: *Overall age-specific fertility rates*



Our particular interest is in women who had given birth as teenagers. As Chart B shows, they were much less common than births at later ages, and correspondingly difficult to estimate with any precision. Another difficulty is that teenage birth rates have been falling rapidly in many countries. This means that the rate will be lower for women in our sample who are now in their early twenties, than for those now in their early thirties. Table 5 compares the teenage birth rate estimated from the ECHP with the figures derived from official statistics, according to the date at which the woman was at risk.[5]

[5] Each woman in the sample was assigned an 'expected risk' of teenage motherhood – the official rate per thousand recorded in that country in the year the woman reached 18_. The 'official

The comparison suggests that the ECHP was systematically under-stating teenage birth rates. With the exception of Denmark and Ireland, the survey estimate was always a few points lower than the estimate based on official registration statistics. On the other hand, the survey was reasonably effective at distinguishing the high-rate countries such as Portugal, the UK and Greece from the low-rate countries such as the Netherlands, Denmark and Italy. Overall, the survey-based estimates err on the low side, giving 14 teenage births per year per thousand women, compared with an expected 17 per thousand.[6] It should be emphasised that getting accurate estimates of birth rates is not the object of this analysis. Our aim is to identify women who had had a baby as a teenager, in order to assess the subsequent quality of their lives, and those of their children. Getting the rates about right was an important check on the method of identifying them; the conclusion is that the method was reasonably, though not very precisely, accurate.

Table 5: *Teenage birth rates: ECHP estimates compared with official statistics, by country*

Annual rates per 1000

	Official statistics	ECHP
Netherlands	7	5
Denmark	10	10
Italy	11	6
Belgium	13	8
Finland	14	9
Spain	14	11
France	15	10
Ireland	17	17
Germany	20	12*
Austria	25	19
Greece	27	31
Portugal	28	24
UK	30	24

Note: *The ECHP estimate for Germany is artificially low because the absence of mothers' and children's birth-months makes mothers appear half a year older than they really were, on average, at the time of the birth.

statistics' tabulated in Table 5 are then the averages of these risks, summed across all the women in the country concerned. Thus the weighting between years at risk is derived from the ECHP sample. 18_ was chosen as the age at risk because that was the average age at which teenage mothers gave birth to their children. Note that the official statistics recorded here are different from, and often higher than, the figures in UNICEF's Report Card on Teenage Births in Rich Nations, because they refer to the earlier period.

[6] Both figures excluding Germany; see the footnote to Table 5.

Age at first birth

Having identified the ages at which women in the sample gave birth to each of their children, it is an initially straightforward task to work out the earliest of those ages; and to define a woman's age at first birth (AaFB) accordingly. However the classification of age at first birth was then limited to women whose oldest child still living with her was less than 16. Given that we consider the identification to be accurate until a child is aged 20, this allows a four year gap to ensure that the earliest 'observed' birth was in fact the woman's earliest 'ever' birth.[7]

This method has identified 1,336 women in the ECHP sample whose first child was born before they were 20. These are divided by country as shown in the first column of Table 6 – the number by country being the joint outcome of the total number of women in the sample, and the rate at which they had teenage births. Eight countries provided at least 100 ex-teenage mothers and should provide robust comparisons between them and those whose first children were born later. The samples dip below 100 in the other five countries, including numbers in the 30s in small countries with low teen birth rates.

Table 6: *Number of women in the sample available for analysis, by age at birth of first child*

	15 to 19	20 to 24	25 to 29	30 or more
Austria	104	350	258	109
Belgium	38	284	363	132
Denmark	37	205	245	130
Finland	38	274	399	252
France	100	529	564	278
Germany	63	352	374	215
Greece	223	465	340	181
Ireland	112	257	292	191
Italy	114	529	599	348
Netherlands	32	295	526	273
Portugal	216	474	288	167
Spain	142	510	540	256
United Kingdom	117	282	329	174
Total	1336	4806	5117	863

[7] This is a potentially confusing point. The identification of a mother's age at the birth of each of her children was limited to children under 20. The identification of her age at the birth of her first child was further limited to those whose oldest child was less than 16.

3. Analytical Approach

Correcting for age-related biases in the identification procedure

The previous chapter explained how women's childbearing history had been worked out on the basis of the dates of birth of the children now living with them. This involved limiting the identification of women whose earliest child had been born at a particular age to those who were now above that age, but whose oldest child was less than 16. This means that the women were interviewed at various stages between one and 15 years after their first child had been born, with an average elapsed time of eight years.

A consequence is that the current ages (at the time of the survey interview) of the women identified as having had children at various periods of their lives were not the same; the members of each five-year range of age-at-first-birth were necessarily about five years older, on average, than the previous group. For example, women whose first child was born at the age of 18 were aged 26, on average, when they were interviewed; but women who started their family at 28 were now 36, on average. These variations are entirely artificial consequences of the method of identifying women's fertility history. It is necessary to check, for each outcome to be analysed, whether that outcome is very sensitive to biases associated either with current age or with elapsed time since the first birth. It will be shown, for example, that the proportion of women reporting good educational qualifications varies a great deal, depending on their current age. It is necessary to correct for the variations between age-at-first-birth groups in their current age, in order to obtain a true measure of the age-at-first-birth effect. By the same token, it may be necessary to correct for variations in the elapsed time since the first child was born, to obtain a true comparison of outcomes, which tend to change over time.

Interpreting the links between outcomes

It has already been seen (Table 1) that teenage mothers had relatively poor educational qualifications; they are less likely to be married than other mothers; they (and their husbands) were less likely to have jobs; and they (and their families) were more likely to live in poverty. These conclusions will remain true after the age-biases just discussed have been taken into account.

It can immediately be seen that there may be a chain of causes between teenage motherhood at the beginning of the sequence and poverty at the end. The direct consequence of having a baby as a teenager might be that the young women had to leave school; if she was not married when she got pregnant, that would increase the chances of her remaining single both immediately after the birth and in subsequent years. The low level of

education could then influence her own chances of getting a job; and the lack of a partner would reduce the likelihood of receiving financial support within the family. The absence of earnings would then increase the risk of poverty.

Without longitudinal data following women and their families throughout the period before and after their children were born, it is not possible to tie down causal pathways with any precision. It is possible, though, to interpret the outcomes in the light of the hypothetical links just outlined. The analysis in the following sections starts with education – the outcome which may be most immediately associated with fertility decisions (see the discussion on page 5). We then follow through the potential sequence of causation in a 'layered' analysis: it will be asked, for example, how far the apparent relationship between age at first birth and employment can be explained by the already-established relationships with education and family structure; then the analysis of poverty considers explanations in terms of education, family structure and employment.

Each section therefore adopts a similar format. The first task is to establish whether the crude differences observed between age-at-first-birth groups stand up after allowing for possible age biases. The second is to show to what extent variations in the outcome under consideration may be mediated by the outcomes already covered in previous sections.

Europe, then countries

In principle, we might investigate all of these possible relationships independently in each of the 13 countries included in the ECHP. In practice that would provide far too complex a set of findings. Instead, we have undertaken a preliminary analysis of the relationships between the variables of interest, covering the whole of Europe (defined as the 13 countries in the sample). These analyses have been weighted to ensure that each country's contribution to the analysis is in proportion to its population size, rather than in proportion to the sample that happened to be interviewed for the survey. Having determined and discussed the overall Europe-wide relationship, we then undertake an identical analysis within each country to show local patterns. It is assumed that the broad *shape* of the relationship between variables is identical in each country; but the *strength* of those relationships is allowed to vary from country to country.

A reminder: the sample of women in Luxembourg was too small for any meaningful analysis by their age at first birth, and that country has been excluded from the analysis.

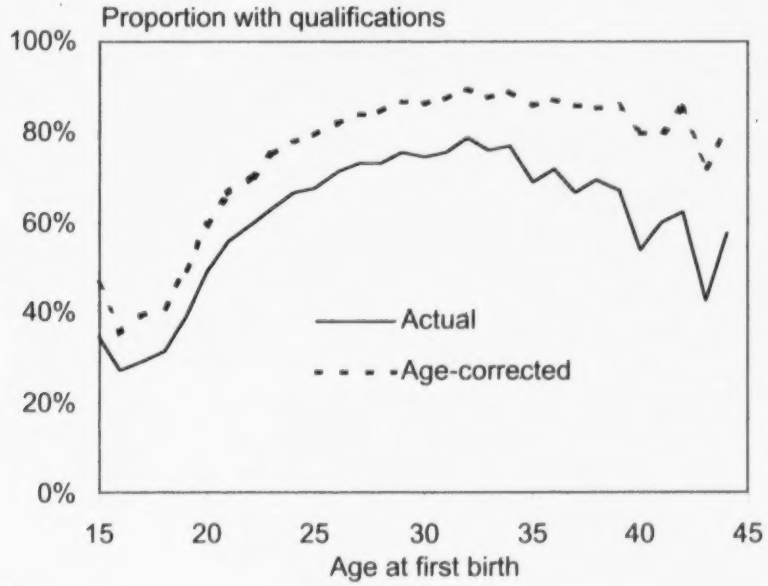
Choosing a metric for age-at-first-birth (AaFB)

Policy concern about the potentially negative outcomes of early child-bearing is closely focused on 'teenage' motherhood – that is, a clear dividing line is

made, depending on whether the mother had reached her twentieth birthday. The analysis will confirm that teenage mothers and their families do experience disadvantage in comparison with women who have children later, throughout Western Europe.

A more general version of the question, though, is to ask how outcomes vary, according to the exact age of the mother at the time of the birth of her first child. Chart C uses the example of educational qualifications to show that there is a strong relationship. Not only were teenage mothers worse off than women who had had children in their early twenties, but the latter were worse off than women who had children in their late twenties. Even within the group of teenage mothers, the few who had children at 16 were worse off than those whose motherhood was delayed to the age of 19.[8]

Chart C: *Proportion of mothers who had upper secondary educational qualifications, by exact age at first birth*



Note: All Europe, weighted.

In fact, there was a systematic relationship. A logistic regression equation analysing the probability of having educational qualifications (and controlling for country of residence and current age) shows that educational achievements increased steeply for each age of later childbirth, up to about

[8] The chart illustrates the practical importance of the age-correction discussed earlier in this chapter. The 'actual' figures appear to show that women who had children after the age of 30 had increasingly poorer educational qualifications. The age-correction shows that this was mainly because the later mothers were older at the time they were interviewed, and were brought up during a period when educational qualifications were less common than they have been recently.

the age of 28. Educational levels then held steady, or may even have declined slowly as the woman's age at first birth increased beyond the age of 28. Very similar relationships were observed for the other outcomes to be discussed in the following sections.

For each outcome, therefore, we have estimated the effect of age-at-first-birth in two ways.

- The more detailed equations have been estimated using a statistical device (known as a 'spline'), in which the year-by-year relationship between AaFB and the dependent variable was estimated independently for women whose first child was born before the age of 28, and for those whose child was born later. In general, the interest is in the first of these – taking 28 as, in a sense, an 'optimum' time to start a family (from the point of view of the outcomes being analysed here), how much better off was a woman and her family observed to be, for each year (up to 28) that she delayed her first child?[9]

- A second analysis will then be used simply to compare teenage mothers as a group (i.e. AaFB between 15 and 19) with all other mothers, to provide a much more straightforward, if less sensitive, summary of the variation in outcomes.

Logistic regression equations

Logistic regression equations have been used to sort out the relative importance of the factors associated with each of the five outcomes to be considered. The technique involves using each of the factors to build up a cumulative prediction of the likelihood of a mother (or family) with given characteristics reaching a particular outcome. The influence of each of the factors included in the equation is calculated, independent of all of the others.

An example of the output is Table 8, which sets out the relationships between current age and parenting history on women's achievement of standard qualifications. The coefficients indicate the strength of the associations. A positive sign means that the factor concerned is associated with an increased probability; a negative sign indicates a reduced probability. Large coefficients can be compared with small ones in the normal way, though it is necessary to take account of the fact that some coefficients are associated with a single characteristic (e.g. teen mother), while others refer to a unit increase in the variable under consideration (e.g. age at first birth). We cannot directly interpret the coefficients in terms of an increase or decrease of so many percentage points in the outcome variable. It is possible, on the other hand, to calculate the proportion for individuals with certain stated

[9] A series of splines was tested, with the 'knots' at different ages of first birth. 28 was the version which most efficiently predicted educational qualifications.

characteristics, and these 'logistic regression estimates' are frequently used to illustrate certain key differences.

The 'pseudo R-squared' reported at the foot of each logistic regression equation is an indication of how close the fit is between the combined predictor variables and the outcome being predicted. In principle it could reach 100 per cent if every case could be predicted unambiguously, although pseudo R-squared rarely reaches much more than 25 per cent in survey analysis of this sort. None of the equations here provides a very close fit. The aim is not so much to find a comprehensive explanation of the influences on any of the outcomes under consideration, as to clarify the consequences of a single factor – teenage motherhood.

4. Educational Qualifications

The ECHP analysis confirms the findings of many other studies, that women who had a child when still a teenager had fewer educational qualifications than those who started a family later. As discussed in the introduction to this paper (page 5), measures of education taken several years after the pregnancy cannot distinguish cause from effect:

- who had already performed poorly in the education system, or who could predict that they would make little further progress, decide to have a baby as they had completed their studies?
- or did women who fell pregnant as teenagers decide to give up their education in order to care for the baby?

Although we cannot establish the direction of cause and effect, the analysis of the ECHP provides an opportunity to compare the strength of this relationship between different countries.

Each country contributing to the ECHP asked respondents to describe their educational qualifications. All countries' qualifications were then coded according to a common framework, using the 'ISCED' classification.[10] The important point is that the upper secondary qualifications ('Level 3') analysed in this paper are the certificates which students are expected to attained on completion of secondary schooling, at about the age of 18.

Table 7 demonstrates rather clearly the extent to which education and motherhood were alternative activities during the crucial period of young women's lives. Nearly three quarters of 16 to 19 year olds who had not had a baby remained in full time education; only a third of mothers in that age group were still at school or college. A large proportion of women without

[10] International Standard Classification of Education

children remained in education in their early twenties, and many continued to their late twenties; but the proportion of women in their twenties who combined motherhood with full-time education was very low. These figures do not necessarily mean that women gave up educational opportunities when they had children; the table is equally consistent with the suggestion that women had children after they had achieved as much education as they intended.

Either way, there is a strong indication that educational progress did not continue after a first baby was born. The proportion of childless women reporting upper secondary level qualifications rose steeply up to a plateau of nearly 80 per cent in the mid-twenties; but this rapid increase with age was not observed among women with children – for them, it was the age at which they had their first child which was most closely associated with their educational attainments.

Table 7: *Proportion of women in full time education or training, by current age and whether a mother*

Cell percentages

	Not (yet) a mother	Already a mother
16 to 19	72	33
20 to 24	38	4
25 to 29	13	2
30 to 34	4	2

Note: All Europe, weighted. The number of women aged 15 to 19 who were already a mother was 76. Women over the age of 35 are excluded from the table because we could not tell whether those of them without co-resident children had ever been a mother.

In order to obtain a precise measurement of the effect of the age at which women started their families, it is necessary to take account of another complication. Those who had children later were necessarily older than the early mothers, simply because of the method of identifying them in the survey. Being older, they were born earlier, and brought up in a period when in many countries secondary education was less widely available (perhaps especially to women) than it has become in more recent times. Three-quarters of all women born in the early 1970s had the standard qualification; only about a third of women born in the 1930s. Logistic regression equations have been used, in Table 8, to measure the association between education and the age at which women had children, discounting the year they themselves were born (which was, of course, an exact correlate of their current age).

The older the woman was at the time of her first birth, the greater the chance of her having qualifications – up to first births at the age of 28, after which AaFB made no further difference. We can use the equation summarised in the first column of Table 8 to calculate what proportion of

women with children would be expected to have qualifications, in a situation where age and country were held constant,[11] but age at first birth was allowed to vary:

Among women whose first child was born when she was 18	54 per cent
Among women whose first child was born when she was 28	89 per cent

The simpler specification in the right hand column of Table 8 shows that women who had been teen mothers were less likely to have qualifications than all other mothers, again after taking account of their own date of birth and the countries they were living in. Again, taking a 'standard' woman, we can estimate the following probabilities:

Among those who had a baby as a teenager	44 per cent
Among all other mothers	75 per cent

Table 8: *Logistic regression equations of the probability of having upper secondary qualifications*

		Logistic regression coefficients	
		Detailed specification of age at first birth	Summary specification
Year mother born	Per year	0.033	-0.01ns
Age at first birth	Per year, up to 28	0.192	na
	Per year, 28 on	-0.011ns	na
	Teen mother	na	-1.32
Constant		-69.18	14.52
Pseudo R squared		10.7%	8.9%

Note: All Europe, weighted; country dummies included in equation but not shown. ns=not significant (p>0.05).

The results in Table 8 are based on the whole of Europe, pooling the data from all countries in the survey, and imposing the condition that a single relationship had to be found. Table 9 then shows what happens if we estimate an equation of the same form separately in each country. The column headed 'logistic regression coefficients' again refers to the model in which the age at which women had their first child was assumed to have a continuous relationship with education, up to age 28. There was a strong and significant link between early motherhood and educational achievement, in all of the countries under study. On the other hand, the strength of that relationship varied from country to country: early parenting was most closely associated

[11] The standard case was assumed to be a woman born in 1971, living in France. The latter was in the middle of the overall distribution of levels of qualification.

with educational disadvantage in Greece and Denmark, but least in the Netherlands and Germany.

The pair of columns to the right of the table shows the actual proportion of teenage mothers who had achieved upper secondary educational qualifications in each country, compared with mothers who started their families at or after the age of 20.[12] The figures illustrate the fact that women's access to qualifications varied greatly between countries, as well as according to the age at which they had children. At the extremes, as many as 82 per cent even of teen mothers had upper secondary qualifications in Finland; in Portugal, only 26 per cent even of non-teen-mothers were similarly qualified. Nevertheless, every country reported a substantial educational disadvantage among young mothers, compared with women who waited till their 20s or later before having a baby.

Table 9: *Country-by-country analysis of the probability of having upper secondary educational qualifications, by age at first birth*

	Logistic regression coefficients	*Actual proportion with qualifications*	
	For each year up to age 28	Teen mothers	Other mothers
Greece	0.278	53%	79%
Denmark	0.268	44%	77%
Ireland	0.263	49%	77%
Portugal	0.245	25%	54%
France	0.227	76%	88%
UK	0.212	20%	43%
Belgium	0.210	58%	79%
Spain	0.198	35%	67%
Finland	0.195	42%	76%
Italy	0.189	9%	25%
Austria	0.166	32%	65%
Germany	0.139	35%	84%
Netherlands	0.132	26%	66%

Note: Countries are listed in descending order of the coefficient in the logistic regression analysis The logistic regression also included the two other variables shown in the first column of Table 8. All country coefficients and differences are significant.

[12] Logistic regression equations were not used, because the only control variable, date of mother's own birth, was insignificant in most countries.

5. Family Structure

The family context of early parenthood can vary strongly from one social group to the next. In many societies, it is common for women to marry at an early age, and to have children within marriage. Where early marriage and childbearing are conventionally accepted, it is likely that teenage mothers would often have the approval of both sets of families, and not necessarily be perceived as either disgraced or disadvantaged.

In other societies, it is unusual for women to marry so young, and a large proportion of teenage pregnancies originate outside marriage. Yet the outcome may vary again, according to the circumstances and expectations of the social situation in which young women find themselves. Conception may end in abortion; in a live birth followed by adoption; in marriage (perhaps precipitated by the pregnancy); or in a period of single parenthood. Some of those starting as single mothers may remain in that state, others may marry later, not necessarily to their first baby's father.

Studies based on direct information about women's marital status at the time of the birth of their first child show that early parenthood is strongly associated with births outside marriage throughout Europe. (Kiernan 1999). The ECHP data describe women's and families' positions at the time of their interview, after their child was born. Some were interviewed only a year after the event, while for others the interview took place 15 years later. We can use this variation in elapsed time since the first birth to infer a process of union formation and dissolution, and to work out, from that, what the situation was likely to have been, soon after mothers started their families.

A high-marriage country: Greece

In Greece, only one mother in the survey said that she was single at the time of her interview. 93 per cent were married, only 1 per cent were cohabiting[13] and 6 per cent were formerly married (widowed, separated or divorced). Marriage was so overwhelmingly the dominant family structure that there was little room for variation between sub-groups. Almost all ex-teenage mothers were married, just as almost all other mothers were. It is also worth noting that the husbands of Greek teenage mothers were about 7_ years older than they were, on average, so that the rate of early parenthood would not look so

[13] Cohabiting is the word used here to describe men and women living as partners without being married to each other. This is labeled a 'consensual union' in the ECHP data.

high in Greece if it was based on fathers' rather than mothers' ages.[14] It was also found that teenage mothers in Greece were substantially more likely to have another child within two or three years than those from any other country in Europe. These are strong signs that the high rate of teenage motherhood in Greece occurs within marriage.

Low-marriage countries: the UK and Ireland

At the opposite end of the spectrum, official statistics record that only 10 per cent of women giving birth as teenagers in Great Britain are married at the time (though many of those not legally married may be cohabiting with the father of their baby) (ONS 2000). The signs are that many single or cohabiting mothers marry later; though they may separate and divorce later still. In fact the UK and Ireland had very similar patterns of family structure, and it is convenient to provide a detailed picture of the process at work in those two countries combined, before looking at the full range of variation between countries.

Three-quarters of all mothers in the UK and Ireland were formally married at the time of their ECHP interview. This is based on a narrow definition – by 'married' we mean not cohabiting, nor widowed, separated or divorced. It is clear from Table 10 that teenage mothers were less likely to be married than women who had had children later; but also, that women who had recently become teenage mothers were less likely to be married than those who had been in the same position at an earlier period. This implies *either* that many teenage mothers who started off single, decided to get married later, *or* that the older generation of ex-teenage mothers were more likely to have married than their more recent counterparts. Both of these trends are probably at work. Either way, the evidence is consistent with the registration statistics - teenage mothers in present-day Britain and Ireland are unlikely to be married at the time their baby is born.

[14] Husbands (and cohabiting partners) were usually older than wives. The age difference was wider for teen mothers than for women whose first child was born later; and wider in Greece than elsewhere.

Average age gap between partners	Teen mothers	Other mothers
Greece	7.4	4.5
Other countries	4.9	2.6

Table 10: *Proportion of mothers in the UK and Ireland who were married at the time of interview, by age at birth of first child and number of years since birth of first child*

Cell percentages

	Age at birth of first child		
Years since first birth	15 to 19	20-24	25-29
0 to 4 years	21	71	83
5-9 years	30	62	79
10-14 years	54	72	87
15-19 years	65		

This inter-relationship between the mother's age when her child was born, and her age now (i.e. the number of years since the birth) can be summarised in the form of another logistic regression equation, this time predicting families' marital status (Table 11). Because there are four possible outcomes (single, cohabiting, married and ex-married), we use a multinomial analysis with three sets of coefficients, predicting each of three conditions other than marriage.

Table 11: *Multinomial logistic analysis of mothers' marital status in the UK and Ireland, based on age at birth of first child and years since first birth*

Logistic regression coefficients

		Single	Cohabiting	Widowed, separated or divorced
Years since first birth	Per year	-0.153	-0.149	0.062
Age at first birth	Per year, up to 28	-0.363	-0.223	-0.155
	Per year, 28 onwards	0.107ns	0.038ns	0.028ns
Constant		7.14	4.39	1.21

Note: Pseudo R-squared=9.7%. ns = not significant (p>0.05).

- The longer the time that had elapsed since she had her first baby, the less likely a mother was to be single or cohabiting, but the more likely to have separated or divorced. These findings are consistent with the idea of marital stages, in which being single and cohabiting occur before marriage, and separation or divorce (obviously) after it.
- The model confirms that the older a woman was when she had a child (up to the age of 28), the less likely she was to be single when interviewed, less likely to be cohabiting, and slightly less likely to have separated or divorced. Thus early motherhood is associated with all three of the alternatives to formal marriage.

- Above the age of 28, there was no significant relationship between mothers' age at first birth and her later marital status.

The equation provides a formula with which to calculate the probable marital status of mothers of different ages and stages. We can infer what women's marital status must have been immediately after their child was born, and then ten years later; and compare women whose children were born at different ages – up to age 28, after which AaFB made no difference. The patterns are illustrated in Chart D, and summarised in Table 12.

Chart D: *Calculated distribution of marital statuses in UK and Ireland, by age at first birth*

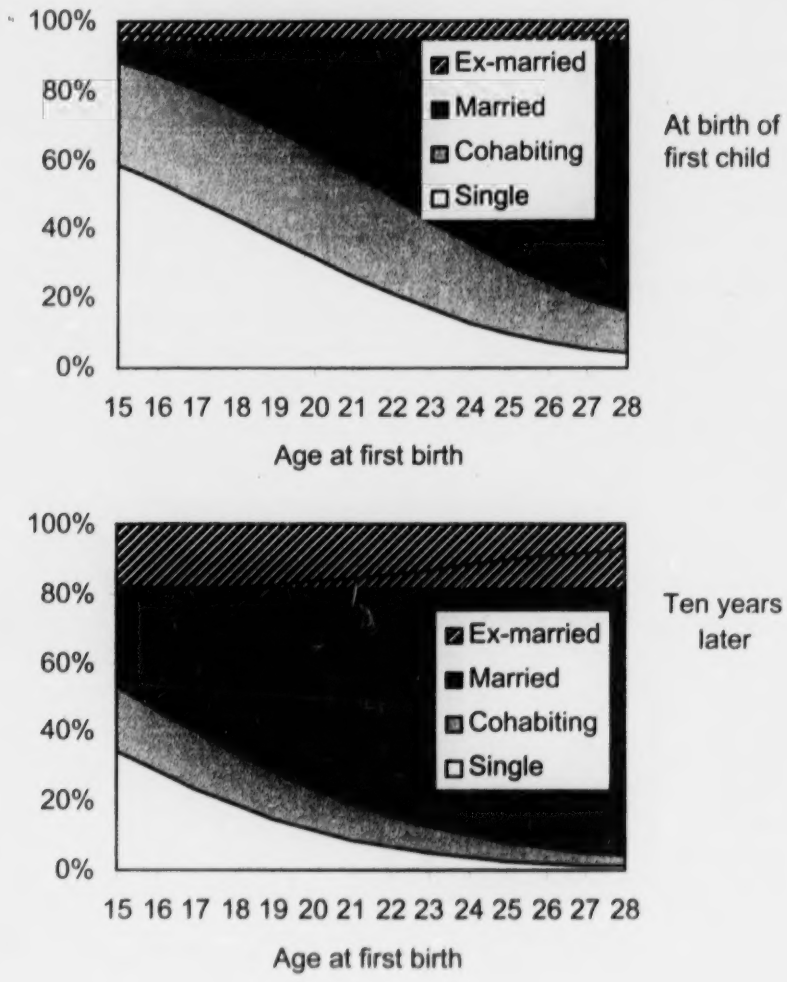


Table 12: *Calculated distribution of marital statuses in UK and Ireland*

Column percentages

	At time of birth		*Ten years later*	
	Age 18	Age 28	Age 18 aFB, now 28	Age 28 aFB, now 38
Single	43%	4%	19%	1%
Cohabiting	32%	13%	15%	3%
Married	20%	80%	47%	89%
Ex-married	5%	4%	18%	7%

Our best estimate is that only a minority of teenage mothers in the UK and Ireland were married immediately after the birth of their child: 43 per cent of 18 year olds were single, and 32 per cent were cohabiting (Table 12). By contrast, three-quarters (77 per cent) of 28-year-old first-time mothers were in formal marriages at the time. For women 10 years after their first birth, more were married, and many had left formal marriages. The gap between the 18-year-old and the 28-year-old mothers was narrower at the ten-year stage, but still substantial. Perhaps the key issue for policy, and for our later analysis of unemployment and poverty, is how many women were lone parents – that is single or widowed/separated/divorced. 37 per cent of British and Irish women who had had a child at the age of 18 were lone parents ten years later (i.e. at the age of 28); for women whose first child was born at the age of 28, only 8 per cent had no partner ten years later (at age 38).

Variations across Europe

There was, of course, a whole range of variations between the two extremes illustrated so far: between Greece (where virtually all mothers, including teen mothers, were married) and the UK and Ireland, where teenage mothers were very unlikely to be married, at the time, and retained relatively low marriage rates. The country by country pattern is shown in Table 13, where the key division is between couples (whether cohabiting or married) and lone parents (whether single or ex-married). As before, two models are shown. The first shows how the probability of being a lone parent varied, for each year of age at first birth between 15 and 28; the second compares teenage mothers as a group with all other mothers. Both equations control for the number of years to have elapsed since the child was born. The right hand side of the table shows the estimated proportion of mothers who were in one parent families, ten years after their child was born.

Table 13: *Logistic regression equations predicting lone parenthood, in each country*

	For each year up to 28	Teen mothers compared with all others	Predicted probability of not being married, 10 years after first birth	
	Coeff	*Coeff*	Teenage mothers	All other mothers
Ireland	-0.343	1.95	34%	7%
Spain	-0.225	1.22	20%	7%
UK	-0.195	1.33	40%	15%
Italy	-0.189	1.59	15%	3%
Finland	-0.136	0.76ns	11%	5%
Netherlands	-0.122	0.52ns	11%	7%
Belgium	-0.117	1.19	26%	10%
Portugal	-0.110	0.62	15%	9%
Germany	-0.068ns	0.61ns	17%	10%
Denmark	-0.066ns	0.28ns	16%	13%
France	-0.036ns	0.36ns	16%	11%
Austria	-0.005ns	-0.04ns	13%	13%
Greece	0.079ns	-0.54ns	3%	6%

Note: Other variables from Table 11 included but not shown. ns = not significant (p>0.05).

Given that the overall number of mothers who did not live with a partner varied so much between countries, the effect of age at first birth is best read from the coefficients in the first two columns of the table. Ireland turned out to be the country where women's marital status was most strongly associated with the timing of their first child. Teenage mothers there were five times more likely to be lone parents as mothers starting their families in their twenties and thirties. (Remember throughout this analysis that lone parents includes separated and divorced mothers as well as single mothers.) There were very strong effects, too, in Spain, the UK and Italy, followed by a series of countries, listed from Finland to Portugal, with clear if less extreme associations. At the lower end of the table, the relationship became less clear, down eventually to Austria and Greece where teenage motherhood seemed to make no difference at all.

The effects of education

In the previous section it was shown that women who had children early tended to have lower levels of educational qualifications than those who put off starting a family. Detailed analysis suggests that women with better education were slightly more likely to have a partner than less-well-educated women, controlling for age at first birth (left hand side of Table 14). Thus part of the tendency of early-mothers to be lone parents may be explained in terms

of their lower levels of education; but most of the relationship between age at first birth and marital status remained, after education had been taken into account.

Table 14: *Probability of having a partner, and of partner having educational qualifications, by mother's age at first birth and her own qualifications*

Logistic regression estimates, expressed as percentages

	Probability of having a partner		*Probability of partner having upper secondary (or better) qualifications*	
Mother's qualifications	Teen mothers	All other mothers	Teen mothers with partners	All other mothers with partners
No, or minimal, quals	75%	88%	37%	52%
Upper secondary quals	77%	89%	69%	81%
Better qualifications	82%	92%	87%	93%

Note: Derived from logistic regression equations predicting having a partner, and partner's qualifications, controlling for years since birth of first child and including country dummies. The 'standard case' used for the calculation was ten years after the mother's first birth, in France. 'Partners' in both equations includes cohabiting partners as well as formally married husbands.

Among mothers who did have a partner (whether married or cohabiting) there was a strong and predictable tendency for the two members of the couple to have similar levels of education. Thus in the right hand side of Table 14, the probability of a partner having qualifications was directly related to the mother's own educational achievements. We already know that young mothers had worse educational records than women who delayed their child-bearing. It now turns out that they also attracted partners who were less educated than other fathers, even after allowing for the mother's own education. The disadvantages associated with teenage motherhood may therefore be seen to be mediated in part through their partnership formation.

Living with (grand)parents

One of the assumptions to be tested in later sections is the possibility that mothers bringing up children as lone parents would be worse off in material terms than couples with children, because of the difficulty of one person looking after children and holding a job at the same time. The large number of one-parent families among ex-teenage mothers is therefore of interest. It is relevant to end this section about family structures by showing that mothers without partners did not necessarily live alone with their children. A previous analysis of the ECHP (Iacovou 1998) has shown that the countries of Western Europe can be divided crudely into two family-formation groups.

- In 'northern and/or Protestant' countries, young people tend to leave home at a relatively early age, and adopt a number of 'intermediate' family forms before, or instead of, marrying and having children (living alone, cohabiting, married but without children and so on). In these countries (listed in the first half of Table 15), it was very rare for couples with children still to be living with their parents (the children's grandparents). In those same countries, the great majority of one-parent families also lived apart from the mother's parents.
- In 'southern and/or Catholic' countries, young people often live with their parents until it is time to set up a family with children of their own. In many of those countries (the second half of the table), it was not uncommon for married couples still to live with his or her parents. As the table shows, lone parents in those 'southern/Catholic' countries had a strong tendency to live with their own parents. It cannot be assumed, in those countries, that lone parents lacked family financial support.

Table 15: *Proportion of families with children living with their parents: couples with children compared with lone parents, by country*

Cell percentages

	Couples with children	Lone mothers
'Northern/Protestant'		
Denmark	1%	0%
Finland	3%	2%
Netherlands	0%	3%
United Kingdom	3%	8%
Germany	2%	9%
Belgium	2%	11%
France	1%	11%
'Southern/Catholic'		
Italy	10%	32%
Austria	21%	36%
Ireland	5%	57%
Greece	21%	60%
Spain	15%	64%
Portugal	23%	69%

Note: Countries are ordered by the proportion of lone mothers living with their own parents.

6. Employment

There are few better indicators of current prosperity and future life chances than whether a woman or her partner (where a partner exists) is in paid employment. There are two distinct issues to be examined: whether the mother herself works and whether any member of the family unit works. These two questions will be analysed in turn, focusing always on differences between mothers and families according to the age at which she had her first child.

Mothers' employment

The employment status of mothers varies according to many circumstances. For the lone parents identified in the previous section, the mother may be the only source of earnings. In couples, there are two potential earners, and the mother's earnings may not be seen to be so crucial. Nevertheless, there are issues to be resolved: between the traditional belief that women with children should remain at home or have minimal participation in the workforce, on the one hand; and the need to increase the family income and maintain a sense of personal economic independence, on the other. The resolution of these issues varies widely between countries – the employment rate of women with both a partner and children ranged from one third in Spain to three-quarters in Finland.

Although women with children were less likely to work than all other women, the focus of the analysis here is whether women who were teenage mothers were less likely to be employed than other mothers. Our overall analyses suggested that early childbearing decreased the likelihood of a woman being in employment, and that it was not necessarily having a baby as a *teenager* that put her at a disadvantage. We have shown that young parenthood is associated with curtailed educational attainment and increased likelihood of lone parenthood, which, taken together, help explain why women who had their first birth at a young age were less likely to be in employment. In Table 16, we begin by presenting the percentage of women with children in employment, grouped by age at first birth, for all of the European countries considered in this analysis. Women who had their first births as teenagers were less likely to be in employment than women in all other age-at-first-birth categories.

It should be noted that employment dropped among women who had children later than their early thirties, however, and this may represent a cohort effect in which earlier generations of women were less likely to combine work and motherhood. As previously established, the technique for identifying age at first birth meant that woman who had babies at later ages

were necessarily older women, from an earlier generation, which justifies the claim that this is a cohort effect.

Table 16: *Proportion of women with children in employment, by age at first birth*

Row percentages

Age at first birth	15-19	41
	20-24	54
	25-29	63
	30-34	67
	35-39	64
	40-44	52

Note: All Europe, weighted.

It is also well established that women with younger children have relatively low employment rates. Of course the *youngest* child in the family is not necessarily the same as the *first-born* whose arrival defined the mother's age at first birth, but there may be an artificial relationship between the method of calculating age at first birth and the current age of women's children, which has to be taken into account. Therefore multivariate analysis must be undertaken, controlling for woman's age and the age of her youngest child, in order to separate these different effects.

Table 17: *Logistic regression equations of the likelihood of being in employment*

Logistic regression coefficients

		Detailed specification of age at first birth	Summary specification
Current age	Per year of age	0.342	0.316
	Per year of age squared	-0.006	-0.004
Age of youngest child	Per year	0.134	0.066
Age at first birth	Per year, up to 28	0.128	na
	Per year, 28 on	0.092	na
	Teen mother	na	-0.529
Constant		-8.30	-5.53
Pseudo R squared		7.6%	6.3%

Note: All Europe, weighted; country dummies included in equation but not shown. All coefficients are significant.

Table 17 presents the logistic regression coefficients of the effect of current age, age of the youngest child, and the mother's age at first birth, on her likelihood of being in employment. The combination of age with a positive sign and age-squared with a negative sign suggests that the

relationship between likelihood of employment and age was curved, rather than linear. In other words, women's likelihood of being in paid employment increased over the twenties, flattened off in the late twenties and early thirties, and then started to decrease again. Age of youngest child was also statistically significant, suggesting that the older the youngest child was, the more likely a woman was to be in employment. Conversely, the younger the child, the less likely the mother was to work. Perhaps surprisingly, variations in employment rates continued right through the children's age-range from birth to 18; there was no strong kink in the relationship at about the time children start going to school.

As before, two measures of age at first birth are presented: the 'spline' previously discussed which distinguishes individual age-years up to, and then beyond, 28; and the variable that simply compares women who gave birth as a teenager with all other mothers. Both were statistically significant. The spline (left hand column) shows that the logistic function of the likelihood of employment increased for each additional year of age at first birth by 0.128 until the age of 28, then continued to increase by 0.092 for every year after age 28. Conversely, being a teen mother significantly reduced the likelihood of employment. Note that the relationships between age at first birth and education and family structure (in the previous sections) were both limited to the period up to 28, and for those outcomes there was no significant association over the later period. Now the analysis of employment shows that a mother's chance of a job continued to increase, the later she had her first child, though less steeply than in the earlier period.

In order to determine whether these effects differed by country, a country by country analysis was undertaken of the effect on mothers' employment of teenage motherhood, age of youngest child, and the age terms. Table 18 displays the results of this analysis. The most striking finding is that early parenthood reduced the likelihood of women's employment in only nine of the countries considered here. The association was strongest in France and Belgium, but there was no evidence of any link in Finland, Greece, Denmark or Austria. If the simpler specification is used, the predicted proportion of employed former teenage mothers in France was only 36 per cent, compared to 60 per cent of all other mothers. The Netherlands, Spain, Italy and Portugal drop out of the group of countries where teen mothers were found to be disadvantaged with respect to other mothers. It was only a minority of countries, therefore, where the simple comparison of teenage mothers with other mothers provided clear evidence of reduced employment prospects.

Table 18: *Logistic regression equations predicting mothers' employment, in each country: all women with children*

	For each year up to age 28	Teen mothers compared with all others	Predicted proportion in employment (at 25)	
	Coeff	*Coeff*	Teen mothers	Other mothers
France	0.208	-0.98	36%	60%
Belgium	0.208	-0.59	47%	61%
Ireland	0.178	-0.96	32%	56%
Netherlands	0.166	-0.36ns	43%	52%
UK	0.122	-0.56	34%	47%
Spain	0.112	0.18ns	24%	21%
Germany	0.110	-0.96	36%	59%
Italy	0.098	-0.00ns	28%	29%
Portugal	0.064	-0.09ns	59%	61%
Finland	0.059ns	-0.13ns	44%	47%
Greece	0.050ns	0.03ns	34%	34%
Denmark	0.048ns	-0.14ns	43%	47%
Austria	0.027ns	-0.17ns	72%	75%

Note: Variables from Table 17 are included in this equation, even if not shown here. Countries are listed in the descending order of the coefficient in the detailed specification. ns=not significant ($p>0.05$).

There may, however, be other factors that influence whether a former teenage mother was in employment. It was shown in Section 4 that teenage mothers had lower educational attainments than other women, and educational qualifications are inextricably linked to employability. As well, it must be noted that a mother's employment, as an approximation of her family's economic well being, is contingent upon economic support that may be provided by her partner. It was determined earlier in this paper that former teenage mothers were less likely to be married than other mothers (Section 5). While employment at the level of the family will be examined next, a clear indicator of how crucial a woman's own employment is for the family's economic success is whether she was a lone parent. It is therefore important to control for the sort of family structure that would affect the likelihood and need for a mother to work.

Table 19 shows what happens when additional controls, for highest educational attainment and whether the mother was a lone parent, are added to the simple model controlling only for mothers' and children's ages.

- It is confirmed that women with qualifications were much more likely to have jobs than unqualified women. The effect of upper secondary qualifications was equivalent to 5_ years delay in starting a family

(0.538/.092). Higher qualifications were even more effective in increasing mothers' chance of a job.

- A country-by-country analysis (not shown in detail) showed that lone mothers in Austria and Spain were *more* likely to have a job than mothers with partners. In the UK however, lone parents' probability of employment was significantly less than that of mothers in couples. In the remaining ten countries, lone mothers and other mothers had similar employment rates. Clearly the triangular relationship of family dependence between mothers, fathers and the state had different outcomes, depending on the traditions and policy regimes of particular countries.

- The key point for this paper is that adding education and lone parenthood to the model improves the fit slightly (as indicated by pseudo R-squared), and reduces the apparent association between mothers' employment and her age at first birth. This suggests that while age at first birth was still an important predictor of the likelihood of employment, this effect was partly explained by, and mediated through, the high rates of lone parenthood and low educational attainments observed among teenage mothers.

Table 19: *Logistic regression equations of the likelihood of the mother being in employment with additional controls for educational qualifications and family structure: all women with children*

		Logistic regression coefficients	
		Controlling for . . .	
		. . . age of mother and of youngest child	. . . plus education and lone parenthood
Current age	Per year of age	0.342	0.305
	Per year of age-squared	-0.006	-0.005
Age of youngest child	Per year	0.134	0.144
Age at first birth	Per year, up to 28	0.128	0.092
	Per year, 28 on	0.092	0.087
Qualifications	None, or below upper secondary	na	0.0
	Upper secondary	na	0.538
	Above upper secondary	na	1.257
Family structure	Lone parent in AU, SP	na	0.546
	Lone parent in UK	na	-0.871
	Couple	na	0.0
Constant		-8.30	-7.29
Pseudo R squared		7.6%	10.7%

Note: All Europe, weighted; country dummies included in equation but not shown. All coefficients are significant.

Family employment

As discussed above, whether or not a mother is in paid employment may be contingent upon the employment status of her partner, where a partner exists. A married woman's employment may not be as crucial to the economic survival of the family. This is obviously different, however, in cases where the woman is the sole provider in a partnership, or where a woman is the lone parent. It is clear that at least one member of the family unit must be working in order to maintain the needs of the family members without claiming social security. In the following analysis, the combined family work status of women and their partners is examined. If either (or both) of the partners had a job, the family was considered 'working'. Our overall findings suggested that the earlier a woman had her first birth, the more likely she was to be in a non-working family. We found that this relationship was mediated through educational attainment and the structure of the family in which she lives.

We began by looking at the percentages of women in working families, categorised by age at first birth. While only just over half of all mothers were themselves in work, the overwhelming majority of all families with children had at least one parent in work – an average of 85 per cent. Initial findings in Table 20 suggest that women who had babies as teenagers were less likely to be in working families at the time of the survey. It is important to note that the women who were over forty at the time of their first birth were also less likely to be in working families, perhaps because their partners were reaching retirement age.

Table 20: *Proportion of women with children in working families, by age at first birth*

		Row percentages
Age at first birth	15-19	74
	20-24	90
	25-29	94
	30-34	93
	35-39	89
	40-44	78

Note: All Europe, weighted. 'Working family' means either the mother or her partner was in employment.

A more sophisticated statistical analysis was required to eliminate the potentially spurious effect of mother's current age. We checked, first, that the age of the youngest child was *not* a statistically significant determinant of family employment. Recall from the previous section that the age of the youngest child was an important predictor of mother's employment: the older the child, the more likely the mother was to have a job. This effect, however, was not found in the case of family employment. The variable was omitted from the equations shown here.

The all-Europe analysis confirmed that age was an important predictor of family employment (Table 21). Because the age-squared term had a negative sign, this suggested that the likelihood of employment increased with age up until a certain point, and then decreased – the same shape as observed for mothers' own employment. This is consistent with the interpretation made from the previous table that older families were less likely to have a working member as they were closer to retirement age.

As with previous sections, we employed two measures of age at first birth: the 'spline' (described earlier) and whether or not the woman was a teenage mother. The results indicated that the likelihood of family employment increased by 0.136 for each year's delay in starting until age 28. This lends support to the hypothesis that younger mothers were less likely to be in employed families. The coefficient up to 28 was very similar to that observed for mothers' employment. There was, however, a decrease in the likelihood of family employment for each year's delay in starting after age 28, in contrast to the continued positive association between age at first birth and mothers' own employment. The simpler measure confirmed that former teenage mothers are significantly less likely to be in working families than women that had their first children later in life.

Table 21: *Logistic regression equations of the likelihood of family employment: all women with children*

		Logistic regression coefficients	
		Detailed specification of age at first birth	Summary specification
Current age	Per year of age	0.395	0.495
	Per year of age-squared	-0.005	-0.007
Age at first birth	Per year, up to 28	0.136	na
	Per year, 28 on	-.085	na
	Teen mother	na	-0.860
Constant		-7.76	-6.31
Pseudo R squared		9.7%	9.1%

Note: All Europe, weighted; country dummies included in equation but not shown. All coefficients are significant.

Table 22 displays the country by country results of the logistic regression of family employment on age, age squared, and the age at first birth measures. The first column shows the logistic regression coefficients for the continuous measure of age at first birth up to 28. The coefficient was positive for the first eight countries listed in the table, indicating that there was an increase in the likelihood of family employment for every additional year of age at first birth until age 28. This variable had no effect on family employment in Italy,

Finland, Greece, Germany or Austria. Three of these five countries were also among the five where there was no effect on mothers' employment.

The variable that measured whether or not a woman was a teenage mother at first birth produced very similar results, except that Germany and Italy now appear among the countries where teenage motherhood was significantly associated with disadvantage. The next columns to the right illustrate the probabilities that mothers would be in working families at age twenty-five. Where the coefficient for having been a teenage mother was strongest, the Netherlands, the probability of a former teenage mother being in an employed family was only 62 per cent compared to 89 per cent of other mothers.

Overall, Table 22 displays results consistent with what may have been expected: former teenage mothers were more likely to be in non-employed families compared to woman who had their first child later in life. It should be pointed out, however, that neither measure of age at first birth predicted family employment in Finland, Austria, and Greece.

Table 22: *Logistic regression equations predicting family employment, in each country*

	For each year up to age 28	Teen mothers compared with all others	Predicted proportion in employment (at 25)	
	Coeff	*Coeff*	Teen mothers	Other mothers
Ireland	0.247	-0.96	51%	73%
Belgium	0.221	-0.70	73%	85%
UK	0.209	-0.95	52%	74%
Netherlands	0.201	-1.63	62%	89%
France	0.199	-0.83	77%	88%
Denmark	0.143	-0.94	75%	89%
Portugal	0.112	-0.70	91%	96%
Spain	0.111	-0.38ns	68%	76%
Italy	0.057ns	-0.77	80%	90%
Finland	0.045ns	0.25ns	82%	78%
Greece	-0.003ns	0.36ns	93%	92%
Germany	-0.009ns	-1.29	71%	90%
Austria	-0.010ns	0.09ns	93%	94%

Note: Variables from Table 21 are included in this equation, even if not shown here. Countries are listed in the descending order of the coefficient in the detailed specification. ns=not significant ($p>0.05$).

In order to determine whether the disadvantage associated with early parenthood could be explained by the other outcomes already analysed, we added educational attainments and marital status to the logistic regression equation (Table 23).

Logic dictates that the higher the qualifications a member of a family has, the more likely he or she is to have skills that employers require, and therefore the more likely he or she is to work. A measure of the educational level of the family (defined as the higher of mother or partner) was strongly associated with the employment position of the family (defined as the better of mother or partner). The advantage of upper secondary qualifications was equivalent to more than a 12-year increment in age-at-first-birth (0.662/0.056). Qualifications above that level further increased families' chances of being in work.

Table 23: *Logistic regression equations of the likelihood of family being in employment with additional controls for highest family educational attainment and marital status: all women with children*

		Logistic regression coefficients	
		Controlling for . . .	
		. . . age of mother and age at first birth	. . . plus education and marital status
Current age	Per year of age	0.395	0.346
	Per year of age squared	-0.005	-0.004
Age at first birth	Per year, up to 28	0.136	0.056
	Per year, 28 on	-0.085	-0.095
Qualifications	None, or below upper secondary	na	0.0
	Upper secondary	na	0.662
	Above upper secondary	na	1.406
Marital status	Lone parent	na	0.0
	Cohabiting	na	1.881
	Married	na	2.434
Constant		-7.76	-7.63
Pseudo R squared		9.7%	25.9%

Note: All Europe, weighted; country dummies included in equation but not shown. All coefficients are significant. Both employment and qualifications are based on the mother and her partner (if she has one).

Although the previous analysis showed that in some countries (Austria and Spain) lone mothers were more likely to work than mothers in couples, it is now clear that the absence of a partner significantly reduces the chance of there being at least one earner in the family. The family-employment advantage associated with being married was huge in relation to the other factors included in the equation. Cohabiting partners also were much more likely to have a job than lone parents, though somewhat less likely to be in work than married couples.

Taking account of these factors significantly reduced the apparent effects of age at first birth on family employment. The gradient per year up to age 28 fell from 0.136 to 0.056. This suggests that a large part of the 'age at first birth' effect was mediated through education and marital status. That is, young mothers and their families were still worse off than women who delayed their parenting: this is partly because they (and their partners) had poorer educational qualifications; partly because they were less likely to be married; and partly because of a remaining effect associated with teenage motherhood, unexplained by these other factors.

7. Income

Defining poor households

The preceding section established that family employment was associated with mothers' age at first birth in some European Union countries, though there was no apparent relationship in others. The ECHP also provides data about income, and it is therefore possible to undertake a direct analysis of the links between early fertility and poverty.

Income and poverty analyses are usually based on the combined income of a whole household, on the grounds that resources are often shared between household members rather than retained for the sole use of the person who earned them, and it is not possible to work out exactly how much each individual benefits. Many 'families' (i.e. partners and children) live in independent 'households', so that for them family income and household income come to the same thing. On the other hand (as was shown in Table 15) many families, especially in southern Europe, live in more complex households, often including the older generation; for them household income includes the income of the other residents. The ECHP collected information from all household members about a range of sources of income (earnings, social security benefits, pensions and so on), covering the calendar year prior to the interview.[15] These were added together across all sources and all household members, and taxes were subtracted.

Total net household income was then divided by an equivalence scale which took account of the number of adults and the number of children in the household (again including all generations), among whom the income has to be spread. In common with most international comparisons, the OECD equivalence scale has been used which takes a value of 1.0 for a single person household, and adds 0.7 for each additional adult and 0.5 for each child. This needs-adjusted income is known as 'equivalent income'.

[15] That is, January to December 1995, for the 1996 survey.

Within each country, we have identified the one-fifth of individuals with the lowest equivalent household incomes, and labeled them 'poor'.[16] Note that this calculation has been done within each country, rather than across all countries; and that it has been based on all adults and children in the sample, not just the families with dependent children who were the subject of detailed analysis. This provided us with a purely relative measure of poverty, which was, by definition, equally frequent in each country; this facilitates comparisons between countries in the effect of age at first birth.

It might be thought that low income and lack of employment could be so closely related as to represent almost the same thing. It is true that nearly two thirds (57 per cent) of the families with children in which neither the mother nor the father had a job, were in the bottom fifth of their national household income distribution. These were a minority of the poor, though – among those who did have a job, their combined earnings, divided by the needs assessment implied by the equivalence scale, still left 16 per cent of them below the poverty threshold used for this analysis

Proportion of families in poverty

Although the poverty line defined 20 per cent of the population of each country as living in 'poor' households, families with children had a rather higher-than-average rate of poverty in many countries. As the left-hand side of Table 24 shows, teenage mothers and their families were substantially more likely to be in poverty than women who had children later.

Table 24: *Proportion of families with children in lowest one-fifth of their national income distribution, by age of mother at first birth, and her age at the time of the interview*

Row percentages

Age at first birth		*Age at time of interview*	
15 to 19	45	15 to 19	54
20 to 24	26	20 to 24	42
25 to 29	16	25 to 29	27
30 to 34	13	30 to 34	23
35 to 39	13	35 to 39	16
40 to 44	20	40 to 44	15
		45 to 49	18
		50 to 54	19
		55 to 59	40

Note: Income is annual net household equivalent income.

[16] A more commonly used conventional poverty line is half national average income. We did not use the latter measure because the rate of poverty varied more between countries. About 14 per cent of the population of Europe would have been as identified as poor on the half-average calculation.

The straightforwardly calculated risk of poverty was lowest for families whose mother started in her late twenties or early thirties, but then rose again for women whose children were born in their early forties. On the other hand, those identified as having had children later, were older when they were interviewed. The right hand side of Table 24 shows a similar U shaped distribution of the proportion of families in poverty, according to the mother's current age. A logistic regression analysis has been undertaken to check the inter-relationship between the two sets of apparent influences (Table 25). The analysis confirmed that families were less likely to be poor (negative coefficient) the older the mother was at the time of having her first child, up to the age of 28, and this was independent of any direct effect of her age at the time of the survey. Whereas the simple table suggested an increase in poverty risk among women who had children later on, the new analysis suggests that there was a continued reduction in poverty beyond first births at 28, although the effect was much weaker than in the pre-28 period.

Table 25: *Logistic regression analysis of the probability of being in the lowest fifth of the national income distribution*

		Logistic regression coefficients	
		Detailed specification of age at first birth	Summary specification
Current age	Per year	-0.190	-0.192
	Per year-squared	0.003	0.002
Age at first birth	Per year, up to 28	-0.157	na
	Per year, 28 on	-0.018	na
	Teen mother	na	0.939
Constant		5.79	2.57
Pseudo R-squared		5.5%	4.0%

Note: All Europe, weighted. Country dummies are included but not shown. All coefficients are significant.

Although the coefficients in the logistic regression analysis do not show this clearly, the effect of the mother's age at the time she had her first child was much more important an influence on the risk of poverty than her age now. This is very clearly illustrated in Table 26, which uses the regression coefficients as a formula to calculate the average risk at certain specified points in the two distributions. Mothers who were 18 when their child was born remained at greater risk of poverty than later starters, throughout the following 15 year period when their increasing age was only slightly associated with a reduced poverty risk. Another potentially important point is that the teen mother's risk of poverty was especially high in the early period of her child-rearing – when, other research suggests, the potential ill-effects

on her children's development may be most serious (Duncan and others, 1998). Women who had children in their late twenties did not appear to be front-loading their risk of poverty in that way. There was a huge gap in the immediate risk of poverty between 18-year-old mothers (55 per cent) and 28-year-old mothers (12 per cent).

Table 26: *Estimated proportion of families with children in the lowest fifth of the national income distribution*

Logistic regression estimates, expressed as percentages

	Age at time of interview					
Age at first birth	18	23	28	33	38	43
18	55%	46%	40%	37%		
23		28%	23%	21%	22%	
28			12%	11%	11%	13%

The evidence therefore suggests a substantial poverty effect associated with teenage motherhood across Europe. The summary specification on the right of Table 25 confirms the story: teenage mothers were about twice as likely to live in a poor household as all other mothers, after allowing for age differences.

There were substantial differences between countries in the scale of the disadvantage associated with mothers' age at first birth. The effect was in the same direction in each country, and was statistically significant in all countries,[17] but the analysis in Table 27 suggests that it was two and half times as strong in the Netherlands as in Spain or Italy. A discussion of the possible reasons for inter-country differences will be introduced in the final section of this paper. It is immediately noticeable, though, that the top five countries in Table 27 were all from the 'northern/Protestant' group[18] (where young people often live in 'intermediate' family forms between leaving home and settling down with spouse and family); while the bottom four countries here were all from the 'southern/Catholic' group (where most young people marry and have children immediately after leaving their parental home).

The right hand side of Table 27 uses the simpler comparison between teenage mothers and all other mothers to illustrate the effects in different countries. In the Netherlands, France and Denmark, teenage mothers were more than twice as likely to experience poverty as other families. In the Netherlands as many as 81 per cent of teen mothers lived in poor households. In Italy and Austria, the differences were far smaller, and teenage motherhood

[17] In three countries, the relationship between single years of AaFB up to 28 and poverty was significant, though the differences between teen mothers and all others were not.

[18] See page 10.

did not carry nearly so serious a disadvantage in terms of later household income.

It should be noted that the two versions of the analysis tell rather different stories about the range of variations between country. The table is ordered in terms of the first column, based on the systematic relationship with each year of age at first birth up to 28. The coefficients in the second column, based on the simpler comparison between teen mothers and all other mothers, show much the same ordering between countries, with three exceptions. Belgium and Finland appeared to have a much weaker association between parenting and poverty, if the second measure is used; while Germany appeared to have a much stronger association. There may be some doubt, therefore, about the position of these countries in the league table.

Table 27: *Country-by-country logistic regression equations of the probability of being in the lowest fifth of the national income distribution*

	For each year up to age 28	Teen mothers compared with all others	Predicted proportion in lowest fifth of incomes (at 25)	
	Coeff	*Coeff*	Teen mothers	Other mothers
Netherlands	-0.275	2.29	81%	30%
France	-0.208	1.45	54%	22%
Belgium	-0.206	0.49ns	44%	33%
Denmark	-0.200	1.46	23%	6%
UK	-0.198	1.00	58%	34%
Ireland	-0.196	0.94	42%	22%
Finland	-0.192	0.56ns	33%	22%
Portugal	-0.133	0.72	24%	14%
Germany	-0.120	1.17	60%	32%
Greece	-0.116	0.58	32%	21%
Austria	-0.114	0.42ns	30%	22%
Italy	-0.111	0.41	42%	32%
Spain	-0.106	0.52	37%	26%

Note: Variables from Table 25 are included in this equation, even if not shown here. ns = not significant ($p<.0.5$). Countries are listed in the descending order of the coefficient in the detailed specification.

The roles of education, family structure and employment

As in previous sections of this paper, the initial analysis here of poverty has shown the extent of disadvantage associated with early parenthood, taking account of the built-in difference in their current ages, but ignoring the other characteristics of teenage mothers that have been identified. Young mothers were more likely to experience later poverty – but was this directly related to

the disadvantages in education, family structure and employment already analysed?

If educational qualifications and family structure are added to the analysis, there is a substantial improvement in the ability of the logistic regression model to allocate families to the poor and not-poor categories – the pseudo-R squared statistic increases from 5.5 per cent to 12.4 per cent (centre column of Table 28).

- Compared with families where neither the mother nor the father had the basic standard qualification, those with upper secondary qualifications were substantially less likely to be poor. Qualifications above upper secondary had an even larger effect in reducing the risk of poverty.
- Lone parents had a very high risk of living in poverty if they did not live with their parents.

Table 28: *Extended logistic regression analyses of the probability of being in the lowest fifth of the national income distribution*

		Logistic regression coefficients		
		Controlling for . . .		
		. . . age only	. . . plus education and family	. . . plus employment
Current age	Per year	-0.190	-0.144	-0.039ns
	Per year squared	0.003	0.002	0.007ns
Age at first birth	Per year, up to 28	-0.157	-0.103	-0.103
	Per year, 28 on	-0.018	-0.014ns	-0.052
Qualifications	None, below upper secondary		0.0	0.0
	Upper secondary		-0.932	-0.794
	Above upper secondary		-1.784	-1.531
Family structure	No partner, does not live with parents		0.884	.831ns
Employment	No work			0.0
	One job			-1.347
	Two jobs			-2.544
Constant		5.79	4.68	4.24
Pseudo R squared		5.5%	12.4%	16.9%

Note: All Europe, weighted. Country dummies were included in the analysis but are not shown. The measures of qualifications and of employment include the situations of the partner, where the mother was married or cohabiting. ns=not significant (p>0.05).

The effects of education and family structure are illustrated in Table 29, which uses the logistic regression coefficients as a formula to calculate the proportion of mothers and families below the poverty line, holding some factors constant and allowing others to vary. Taking a woman whose first child was born when she was 28 as an example, and assuming that she was married, the proportion in poverty fell from 33 per cent among those with minimal qualifications, to 8 per cent if she or her partner was educated to above upper secondary level. Assuming upper secondary qualifications, the proportion in poverty was 57 per cent among those living alone compared to less than one third that rate among married couples.

The illustrations in Table 29 confirm that there was still a difference in poverty risk associated with mothers' age at first birth. For the married couple with upper secondary qualifications, a woman whose first child was born at the age of 18 was more than twice as likely to be in poverty as her equivalent who started a family at 28. On the other hand, we know that teen mothers tended to have lower qualifications, and were often not married, and this increased their poverty risk still further. We can conclude that part of the difference between younger and older mothers was attributable to, or was mediated by, variations in education and marital status; and part of the difference was independent of those intermediate influences. The best indication of the relative importance of those two lines of association is the reduction in the regression coefficient associated with age at first birth between the first and the second analysis. The raw effect of age at first birth (up to 28) was -0.157 for each year. The coefficient shrank to -0.103 when education and family structure were allowed to exert their influence; it can be inferred that about one third of the raw influence was mediated through the other variables.

Table 29: *Calculated proportion in the lowest fifth of the national income distribution, by educational qualifications and family structure*

Logistic regression estimates, expressed as percentages

	Age at first birth	
	18	28
Educational qualifications		
None, or less than upper secondary	58%	33%
Upper secondary	35%	16%
Higher than upper secondary	19%	8%
Family structure		
No partner, lives alone	57%	32%
Lived with partner or parents	35%	16%

Note: Derived from logistic regression equation in the middle column of Table 28. Standard cases were aged 30 at the time of interview, were married and had upper secondary qualifications.

The right hand column of Table 28 (above) shows that, as one might expect, having a job significantly reduced the risk of poverty, and that having two jobs in the family (i.e. both parents in work) reduced it still further. Knowing which families had jobs improved the ability of the model to 'predict' which ones would be poor. Including employment in the new equation reduced the apparent association between poverty and some of the other variables such as age and family structure; this implies that much of the variations by age and family were mediated though employment. On the other hand, the independent effect of the age at which mothers had their first baby was just as strong after employment was taken into account, as it had been before. The indications are, therefore, that the employment characteristics analysed in the previous section were not important mediators in the link between teenage motherhood and poverty.

Interpreting the differences between countries

It has been shown that the risk of poverty was higher among families whose mother first had children at a relatively young age – in all the countries studied. Table 27 showed, however, substantial differences between countries in the extent of the disadvantage associated with mothers' age at first birth. The coefficient in the more detailed specification (first column of the table) was nearly three times as high in the Netherlands, as it was in Italy and Spain. Including education and marital status in the analysis helped to explain some of the processes at work, but did not affect the range of variation between countries.

It has already been pointed out that many of the countries with the strongest association between poverty and age at first birth were in the 'northern/Protestant group. It is useful to look for other characteristics that might be associated with the varying risk of poverty. This has been done in Chart E. The vertical axis, 'increased risk of poverty', plots the country coefficients from the first column of Table 27 (but with negative signs reversed). It is therefore a measure of the extent to which having children early rather than late increased the probability that a woman and her family would live in a 'poor' household at the time of the ECHP interview (controlling for her current age), compared with women who delayed their first child. It can be seen from both graphs that there were three groups of countries:

High increased risk	0.275	Netherlands
Medium increased risk	0.192 to 0.208	France
		Belgium
		Denmark
		UK
		Ireland
		Finland
Low increased risk	0.106 to 0.133	Portugal
		Germany
		Greece
		Austria
		Italy
		Spain

This increased risk appeared to be associated with two other demographic characteristics of the country concerned;[19]

- Fertility gap: the difference between the five-year fertility rates of teenagers and the fertility rates of women aged 25 to 29 (the peak period for child-bearing). The first graph clearly suggests that the group of countries where teenage mothers had the most exceptional risk of poverty were also countries where teenage motherhood was more exceptional, compared with parenting rates in the late twenties.

- Family formation gap: the difference between the median age at which young women ceased to live with their parents, and the median age at which they started to be married with children.[20] This gap represents the extent to which young women in the country concerned tended to experience a period of 'intermediate' family forms in between their two conventional family positions. The second graph suggests that the group of countries where teenage mothers had the most exceptional risk of poverty were also countries where women rarely moved straight from their family of origin to become 'married with children'.

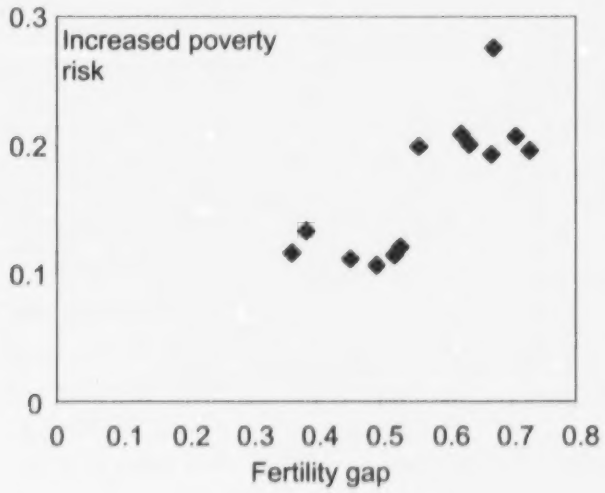
[19] Both characteristics have been calculated from the ECHP data, rather than derived from external sources.

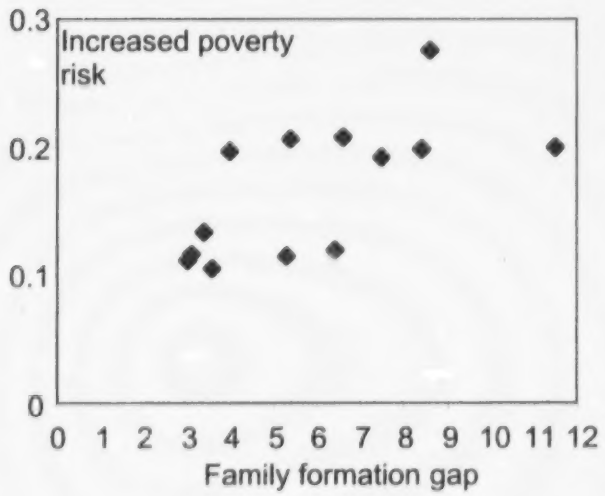
[20] The age by which 50 per cent of young women were no longer single, childless and living with their parents; the age by which 50 per cent of young women were married (narrow definition) and had children.

Not surprisingly, these two measures of a country's demographic patterns were correlated with each other; but each was also independently associated with the increased poverty risk of young mothers.[21]

It is not possible to reach firm conclusions about the existence of relationships at the country-by-country level, when only 13 observations are available. The conclusions to be drawn from Chart E can only be tentative.

Chart E: *Increased risk of poverty associated with early parenthood, plotted against other demographic characteristics of countries.*





Note: See text for explanation of variables plotted. Each marker represents a country.

[21] A multiple regression equation using fertility gap and family formation gap to predict increased poverty risk had an adjusted R squared of 63 per cent.

One interpretation may be that teenage motherhood is especially problematic in societies where most young women leave home early, adopt an independent lifestyle in their twenties, and then start a family some years later. Women who have children much younger than that are exceptional; and find that the family and neighbourhood networks which might otherwise have supported them are no longer available. In countries where young people are closely tied to their families of origin, and where women quite often have children at a relatively young age, teenage mothers are less isolated. These factors help to explain why early parenting is more disadvantaging in 'northern/Protestant' Europe, where the gap between leaving home and starting a family is widest (Iacovou 1998). This gap is probably widening in most countries across Europe; if so, the problems associated with teenage motherhood may become more severe.

8. Review and Conclusions

It has long been clear that teenage mothers in many western countries had a high risk of disadvantage in fields such as education, employment and poverty. It has also been known that the teenage birth rate varied widely between countries. There has, though, been no opportunity to make a systematic comparison of the outcomes of early fertility, between countries – across societies and across policy regimes. The availability of a single survey, asking the same questions in almost all the countries of the European Union, has enabled us to assess the impact of teenage motherhood across Europe as a whole, and to make detailed comparisons between countries.

We used data about the children who lived in a family to calculate the age at which women had their first baby. The technique proved broadly reliable, though three issues need to be taken into account. First, the analysis seemed to under-estimate teenage birth rates in many countries, compared with what would have been expected on the basis of official statistics for the period when the women were at risk. Second, because the time-frame within which a first birth could be identified was between 1 and 15 years after the event, women identified as having given birth at different ages inevitably varied in their ages at the time of the survey; this meant that quite complex analysis was necessary to isolate the effects of early fertility, independent of other factors. The third, and ultimately the most important, methodological difficulty is that all the information relates to a period after the event, and it is not possible to distinguish causes and effects in a rigorous way.

In spite of these technical difficulties, the availability of a single survey has provided the first opportunity to make direct comparisons between countries in the disadvantages experienced by young mothers and their families. The analysis confirms that the disadvantage applies in all countries.

But for the first time a systematic comparison between countries allows some insight into the potential influences of social values and/or of public policy.

Over Europe as a whole,[22] the findings can be interpreted in terms of a series of influences on mothers' and families' life courses. If the age at which a woman started her family is left on one side for a moment, we can conceive of a range of key factors which might make the difference between prosperity and disadvantage: starting, perhaps, with a woman's educational attainment; the family structure within which she raises children (i.e. marriage as opposed to lone parenthood); the qualifications of her partner; her own employment prospects, the chances of anyone in the family having a job; the family's level of income. The analysis has confirmed that across Europe, all these factors are associated with each other, to a greater or less degree, so that disadvantage in one dimension tends to coincide with disadvantage in another. To the extent that a mother's status in one dimension is determined before her position in the next, it is possible to talk in terms of causal links. So, one might say, for example, that a low level of education might increase the probability of lone parenthood; lone parenthood might mean the absence of family employment; which would lead to poverty. All these potential links are visible in the European data.

The age at which a woman gave birth to her first child proved to be associated with all of these factors, with teenage motherhood always representing the disadvantaged end of the spectrum. On average across Europe, 54 per cent of women who had a child at 18 gained upper secondary educational qualifications; among women who delayed having a child until they were 28, the proportion was 89 per cent (page 21). It is not possible to say for sure whether poor educational achievements and prospects encouraged young women to take the early route to motherhood, or whether the birth of a baby encouraged or forced them to give up their schooling. Probably both effects occur. Either way, though, it is not surprising that 40 per cent of the 18-year-old mothers are estimated to have been in poverty when their child was ten years old, compared with only 11 per cent of the 28-year-old mothers (page 43). The analysis has established that part of teen mothers' increased risk of poverty can be explained by their low level of educational qualifications, part by their family positions, and so on; but much of the poverty problem appears to have been a direct correlate of the age at which she had her child, independently of the intermediate factors included in the analysis.

The starting point for the research was concern about the fate of teenage mothers and their children, compared with families whose mother was over the age of 20 when the first child was born. For most outcomes, in most

[22] Defined as the 13 EU countries with large enough samples of ECHP data.

countries, this straight comparison was a valid one. But in every case, the analysis produced clearer results if each year of age at first birth was allowed to contribute to the measure of advantage and disadvantage, between 15 and 28. That is, a baby born at 15 or 16 was more serious, in terms of outcomes, than one born at 19; a 25 year old mother would expect to be better off than a 20 year old, and so on. Thus *teenage motherhood* may be seen as conceptually equivalent to *poverty* – a convenient benchmark on which to focus analysis and policy, rather than a clearly delineated boundary between an acceptable and unacceptable social position.

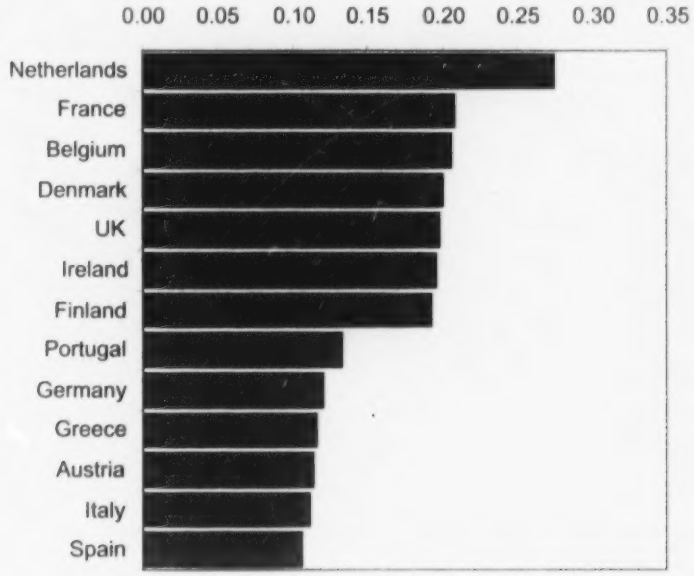
The range of experiences in different countries was wide. In every country, young mothers were less likely to have upper secondary educational qualifications than older mothers; but the highest regression coefficient was more than twice the size of the lowest. In most countries, young mothers were less likely to be in formal marriages – the exception was Greece. In the majority of countries, young mothers were less likely to have a job, and less likely to have a partner in work, though there were several countries where such relationships could not be established. In every country, early motherhood was associated with an increased risk of poverty; here, the highest regression coefficient was nearly three times the lowest.

It may be suggested that poverty is, in a sense, the most general measure of disadvantage. Chart F therefore plots the association between poverty and the age at which mothers started their families, to provide an overview of the findings. The Netherlands was clearly the country where young mothers were most disadvantaged, according to this measure. There followed a group of countries, from France to Finland, where the apparent consequences of young motherhood remained severe. There was a third group of countries, from Portugal to Spain, where the associations, though still significant, were less strong.[23]

Why should the age at which a woman starts her family make such a big difference to her prospects in one country, and so little difference in another? The simple model linking the age at which women had children through education, family structure and employment to income provided a way of thinking about possible processes at a Europe-wide level, but it was not so helpful in providing an explanation for variations between countries.

[23] It was pointed out on page 44, though, that the positions of Belgium, Finland and Germany in this ordering were subject to uncertainty.

Chart F: *Association between household income and age at first birth (up to 28)*



Note: The chart plots the logistic regression coefficients from the first column of Table 27, with negative signs reversed. Countries with coefficients below 0.15 are coloured grey.

The associations between early motherhood and each of the other four outcome variables analysed are plotted in Chart G (page 55). The ordering and colouring of the countries in the new chart are the same as those in Chart F, which was designed to emphasise the rank order of the countries in terms of the link between parenting and poverty. This method of presentation helps to show that the ordering of countries on the other variables was not, in general, the same as for poverty.

It might have been supposed that the countries where young mothers suffered the greatest educational disadvantage would show the greatest increased risk of poverty. Far from it: Greece was top of the educational disadvantage scale (first panel of Chart G), and near the bottom of the income disadvantage scale. It was the Netherlands where the increased risk of poverty was greatest – the place where young mothers' education suffered least. More generally, there was no association (either way) between the results of the country-by-country analysis of education and of poverty. The same could be said of lone parenthood and mothers' employment (second and third panels of the chart). There was, though, a significant tendency for countries where age at first birth was closely associated with family employment (fourth panel of

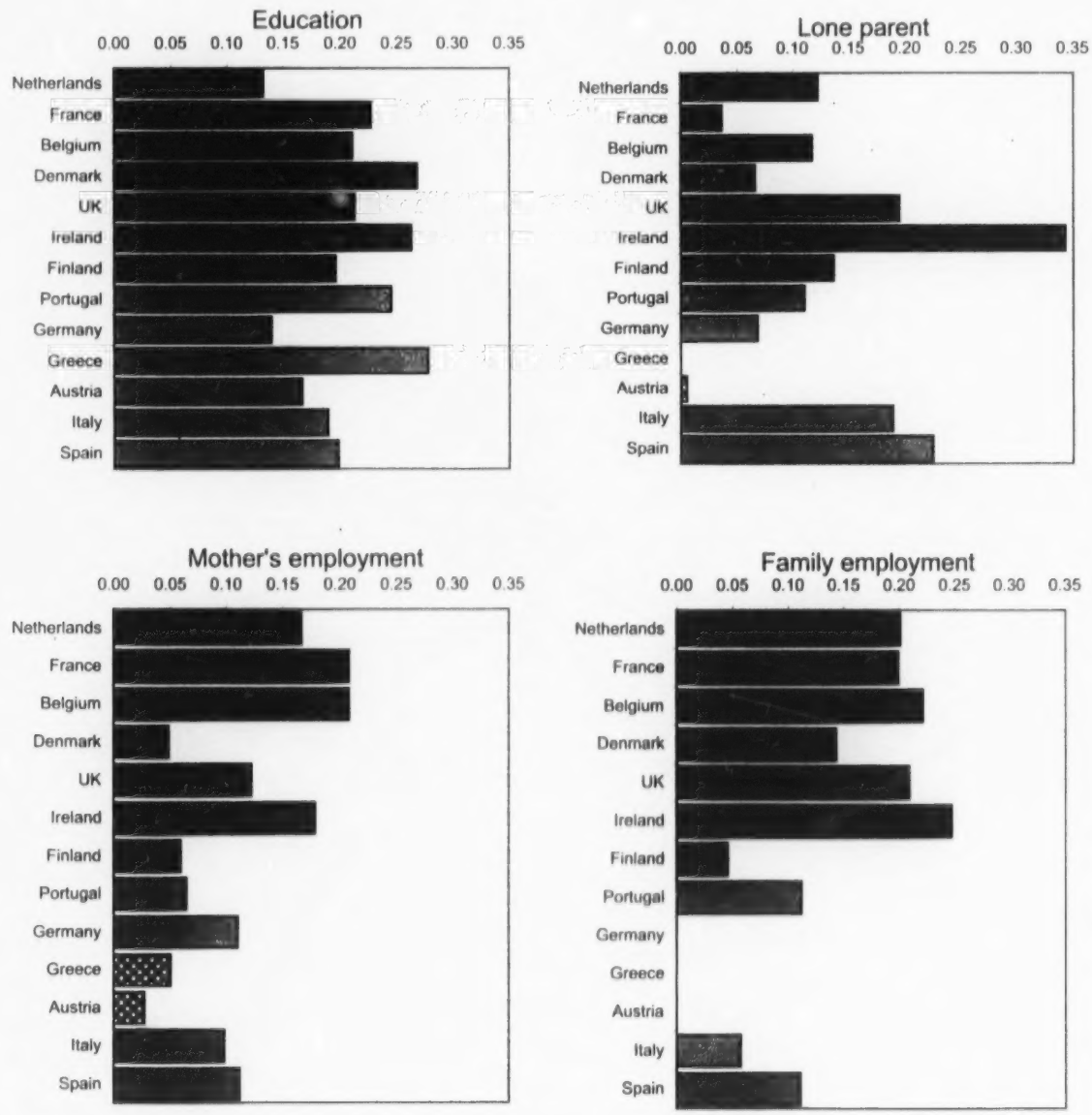
Chart G), to be the same countries where it was closely associated with household income.[24]

Detailed country by country studies would be valuable; but a comparison across countries may also provide some hints. It was shown at the end of the previous chapter that the group of countries where the families of young mothers were most likely to be poor (relative to older mothers) tended to be countries where, first, the rate of teenage motherhood was much lower than the equivalent fertility rate for 25 to 29 year olds and, second, where women often had a lengthy period between leaving their parental home and forming a nuclear family of their own. These two findings, in combination, suggest that outcomes may be linked to social conventions. In the (mainly northern) group of countries where age at first birth is closely associated with poverty, women who have children as teenagers are exceptional; and find that the family and neighbourhood networks which might otherwise have supported them are no longer available. In the (mainly Southern) group of countries with a relatively weak link between parenting and poverty, young people are closely tied to their families of origin, and women quite often have children at a relatively young age, so teenage mothers are less isolated.

The discussion in the previous paragraphs has assumed that poverty was the best overall indicator of disadvantage, and that other issues, such as education, family structure and employment, were mainly contributors to that primary outcome. An alternative way of summarising the results is to give equal weight to all five indicators. This may be considered to provide a more balanced view, taking account of each type of outcome as a disadvantage in its own right. A technical argument for looking at all five indicators is that the results may be less sensitive to any quirks of measurement or analysis which might affect any one of them.

[24] The correlation coefficient was 0.75

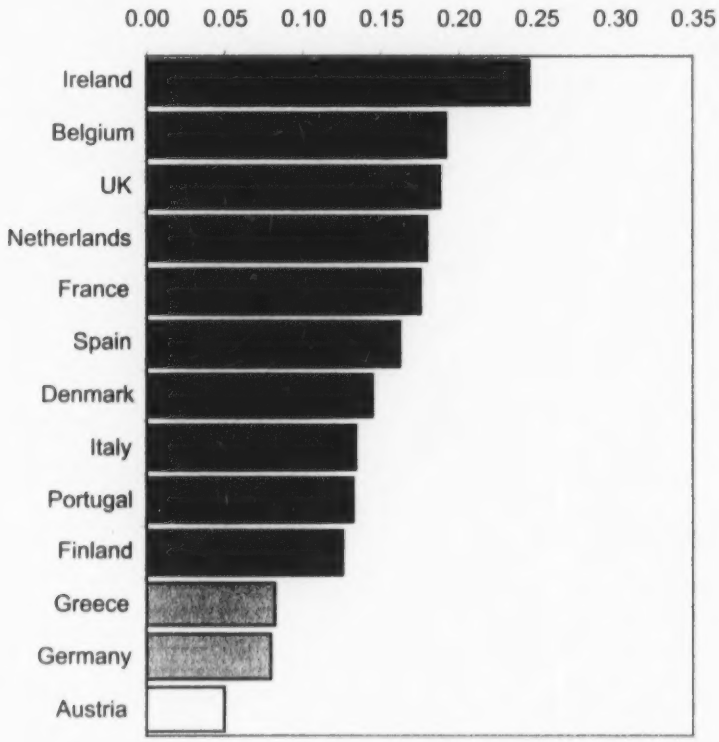
Chart G: *Association between education, lone parenthood, employment and family employment, and age at first birth (up to 28)*



Note: The chart plots the logistic regression coefficients from the first columns of Tables 9, 13, 18 and 22 respectively. In the lone parents graph, the negative signs have been reversed. The ordering and colouring of the countries is derived from Chart F, and all graphs have the same scale. Coefficients which appeared to be less than zero are shown as zero; coefficients which were not statistically significant are dappled.

Chart H therefore presents the averages of the five sets of logistic regression coefficients already shown separately in Charts F and G. The averaging process tends to reduce the range of variation between countries (compared with a single measure). Even so, the differences were substantial, with the highest figure five times the lowest. On this measure, taking all things into account, Ireland was the worst place to have a baby while still a teenager. The relative disadvantage was substantially lower in Greece and Germany than elsewhere in Europe, but least of all in Austria.

Chart H: *Average association between age at first birth (up to 28) and all five outcomes*



Considerations specific to each country may provide some of the detailed answers to this question. For example, it has been argued that 'Austria is a special case which has a long history of marriage following on from a first birth' (Kiernan 1999 page 14, citing Prinz 1995). This may help to explain why Austria was among the countries where teenage motherhood was least associated with disadvantage, for all the outcome measures considered here.

Much more detailed consideration needs to be given to conditions and policies in each country than has been possible in this statistical tour of Europe. The overall conclusion of the analysis is clear, in any case: young mothers and their families experience disadvantage in all the countries considered.

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Appendix 1: Five outcomes: teenage mothers compared with mothers whose first child was born in their twenties, by country

Cell percentages

	Less than upper secondary education		Without partner		Not working		Neither woman nor partner is working		Household income below bottom quintile	
	15-19	20-29	15-19	20-29	15-19	20-29	15-19	20-29	15-19	20-29
Austria	52	23	13	12	30	31	6	4	31	24
Belgium	52	22	24	8	55	27	32	7	45	19
Denmark	65	17	16	12	46	25	22	6	24	8
Finland	24	9	11	5	42	27	13	8	29	17
France	62	24	16	10	61	35	18	6	51	18
Germany	57	24	18	10	60	36	24	5	54	21
Greece	74	35	4	6	61	55	6	6	30	17
Ireland	73	37	42	14	69	51	46	14	41	23
Italy	77	52	15	3	64	54	18	5	36	20
Netherlands	50	22	13	7	53	42	31	7	78	26
Portugal	92	78	15	7	37	32	8	4	26	16
Spain	80	59	20	7	70	66	27	12	35	22
UK	65	37	39	15	61	37	43	14	53	23
All Europe	67	34	23	19	59	41	26	8	45	21
Difference	33		4		18		18		24	

Note: Shaded cells indicate significant differences ($p<0.05$). This table is identical to Figure 5 in UNICEF's report on Teenage Births in Rich Countries, except that the order of rows and columns are different.

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THE OUTCOMES OF TEENAGE MOTHERHOOD IN EUROPE

This paper analyses the current positions of women whose first child was born when they were teenagers across 13 countries in the European Union, based on the European Community Household Panel survey. Outcomes considered include educational attainment, family structure, family employment and household income. Teenage mothers were disadvantaged in all countries, but the severity of their position varied substantially between countries.

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